JULY 20, 1959

PAPER TRADE JOURNAL

Program for Removing the Patchwork From the Material Handling Quilt

Reclaiming Method Doubles Refiner Plug Life and Makes for Savings

Statistical Approach Measures A Paper Machine's Capabilities

Mill Storerooms and How Effective Policy is Established Over Them

Editorial Dept.
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Geigy
dyestuff makers
since 1859

GEIGY takes a new approach to blue and green bond and printing papers.

See Page 4

Announcing... a major break-through in valve design

OIC's NEW ½" to 2" ductile iron

PIPE·PAL

GATE VALVES

It's an OIC *first!* OIC proudly introduces PIPE·PAL, the first valve designed especially to put the advantages of ductile iron to work for you.

PIPE·PAL fills the void in those applications where a more corrosion-resistant valve with greater thermal shock resistance has long been needed . . . applications where forged and cast steel have never fully met the need. OIC's advanced design makes full use of ductile iron's toughness, economy, and corrosion resistance.

PIPE·PAL, in ½" to 2" sizes, features an entirely new design—no minor innovation—with proven performance characteristics that will make it well worth your while to review all your present valve applications, and find the spots where you can effect economies to fight the cost-price squeeze with PIPE·PAL.

Pressure rating: Screwed 1000 psi at -20° F to 650° F. Flanged: 150 psi at 400° F. Test pressures: 2175 psi shell test. 1500 psi seat test. Ratings to 1440 psi available from manufacturer. Write for details.

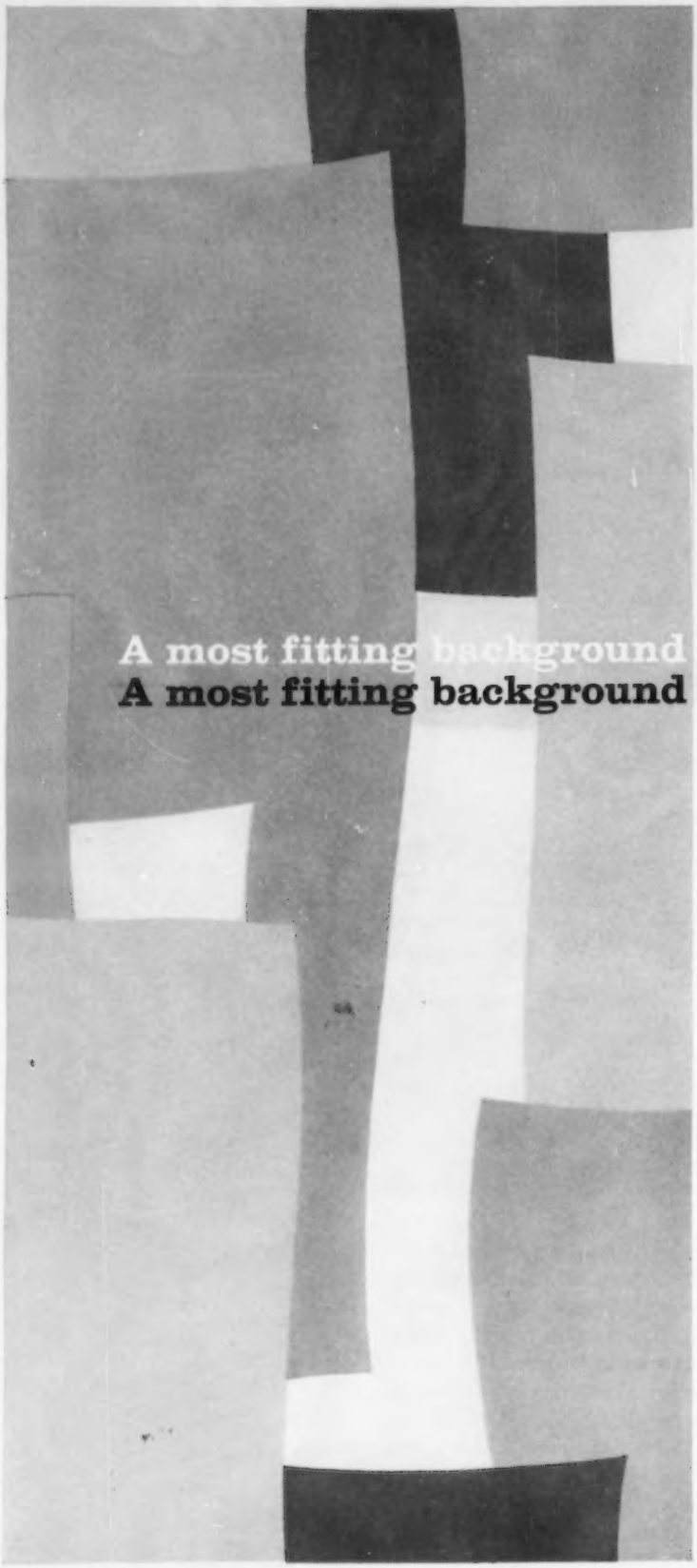
OIC VALVES | FORGED & CAST STEEL, BRONZE, IRON & DUCTILE IRON VALVES

THE OHIO INJECTOR COMPANY • WADSWORTH, OHIO

NEW.... Emerson CLAFLIN® 303

Research, engineering and industrial design have all contributed to the newly-designed EMERSON CLAFLIN 303 to achieve a combination of matchless operating efficiencies in a machine which is regularly meeting new demands of the papermaker from pulp mill defibering to paper mill refining. The 303 is built in Emerson's modern manufacturing facilities. It is backed by Emerson's reputation for quality. If you are considering refining equipment, learn *all* the facts about the new Emerson Claflin 303. Write The Emerson Manufacturing Co., Division of John W. Bolton & Sons, Inc., Lawrence, Massachusetts.

BOLTON EMERSON
TRADE MARK



A most fitting background for type

A most fitting background for type

Dyestuffs by Geigy.

Here's a new approach to Blue and Green bond and printing papers.

Solophenyl® Blue 8GL

A low cost direct blue with the necessary fastness properties for fine papers.

Paper Bond Blue BP

A low cost Alizarine type blue with rapid developing characteristics and needed properties for high grade printing papers.

Use the above two blues as a base for blue shades or in conjunction with

Chinoline Yellow P Conc
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for green shades.

Our technical staff will be glad to demonstrate the adaptability of those products.

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REMEMBER THESE DATES

September 9-11. TAPPI Fundamental Research Conference, Institute of Paper Chemistry, Appleton, Wis.

September 21-23. Paper-Plastics Conference, Edgewater Beach Hotel, Chicago, Ill.

SUBSCRIPTIONS →

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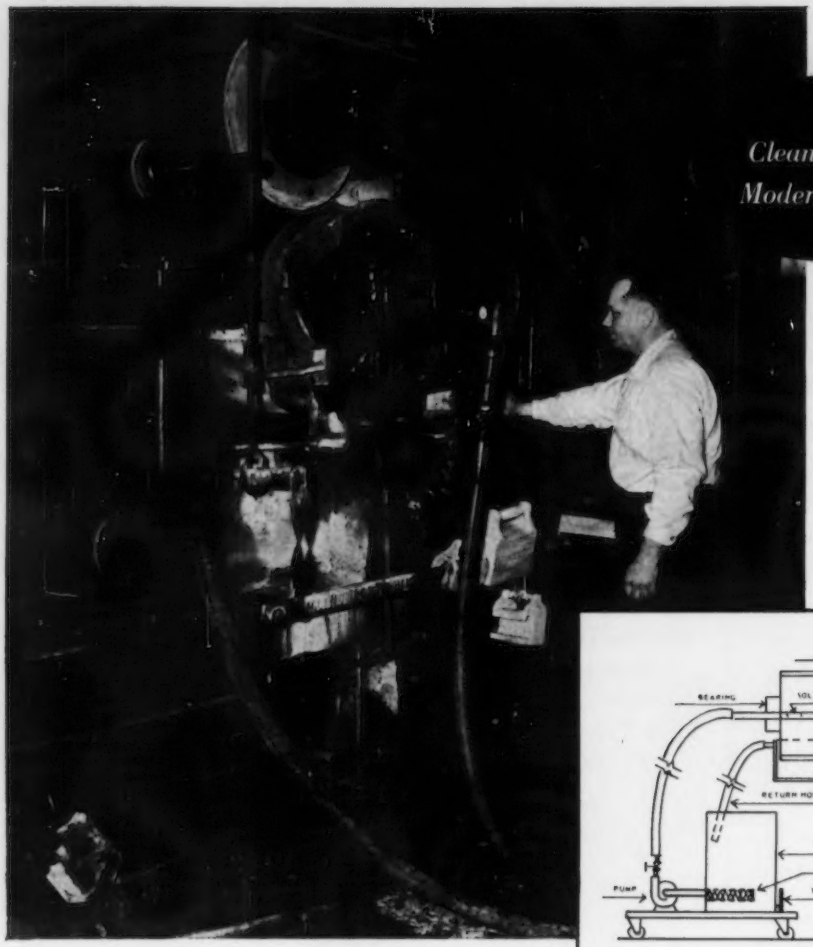
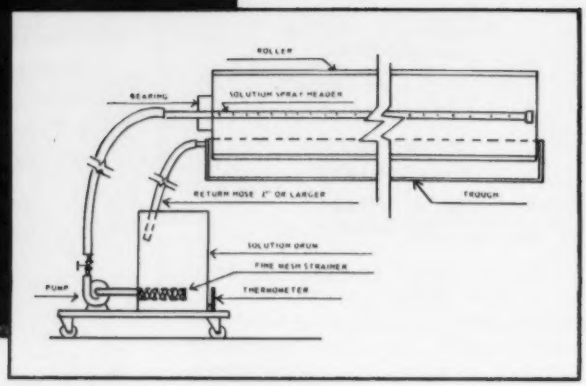




Mill cleans suction press rolls mechanically—and saves $835 a year

Pierced with 5/32" holes which plugged up every few weeks of running, the 1½"-thick rubber covering on suction roll of a saturated asphalt paper line had to be cleaned by crews using electric drills on the imbedded soils.

Now, the job is mechanized. It's done in-place, *chemically*, at a savings estimated at $835 per year—and done better, to boot.

How system works: Taking the Oakite man's recommendations, the mill built a cleaning solution tank with pump and hose connections, installed a permanent save-all *under* the roll, and a connection to the shower pipe *inside* the roll.

A solution of Oakite Compound No. 85 sprays inside of the roll, flowing through the holes to the overflow tank. Meanwhile, the roll rotates through the solution accumulated in the save-all. After ½ hour of circulation, and a rinse, the job's done—thoroughly.

Drill-out method averages $379 for pulling, cleaning and replacing roll four times a year . . . or $1,516 yearly. Done *six* times a year, the Oakite method keeps roll in top condition, eliminates dismantling, costs only $681.

Ask your Oakite man how he can help you get better cleaning at lower cost. He's qualified to draw up a modern cleaning system for the whole mill. Call him in today, or send for Bulletin B-4591. Oakite Products, Inc., 68 Rector Street, New York 6, N. Y.

Technical Service Representatives in Principal Cities of U. S. and Canada

Export Division Cable Address: Oakite

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE
SCIENCE
In our 50th year

Modern Cleaning Systems Keep Downtime DOWN

STANLEY made the strapping tool mobile and cut packaging time up to 75%!

At Strathmore Paper Co., West Springfield, Mass., The Stanley Steel Strapping Specialist suspended a Stanley Electric Skid Magazine Tool from a balancer on an over-head mount.

Now the tool can be speedily positioned for applying Stanley Steel Strapping with maximum ease and efficiency to unit pack sixteen corrugated cartons of paper to a skid.

Strathmore's Manager of Production Planning, William F. Butler, says this tool mobility "cuts packing and loading time 50 to 75%!"

The Stanley Steel Strapping System can be tailored to give YOU greater tool mobility for faster packaging. Write for data sheets to STANLEY STEEL STRAPPING, Division of The Stanley Works, Dept. G, 1307 Corbin Ave., New Britain, Conn.

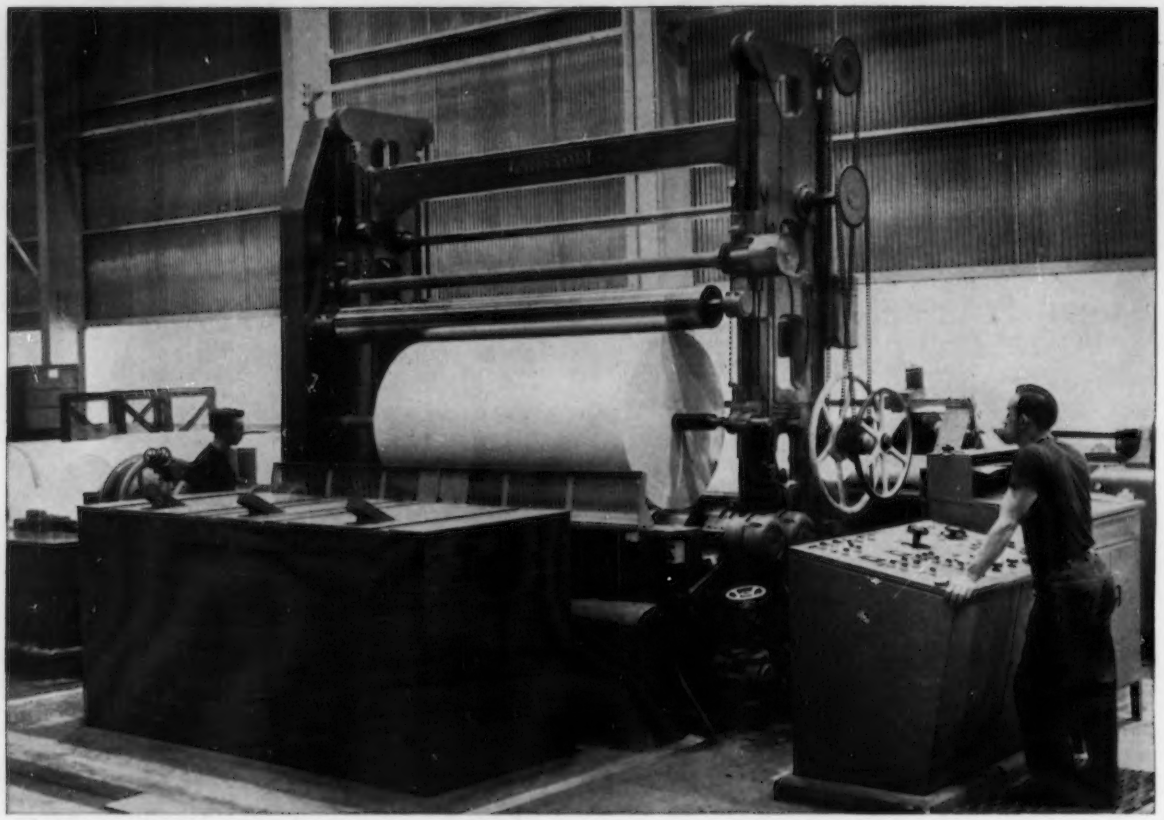
STANLEY INSURE IT - SECURE IT WITH STANLEY STEEL STRAPPING

STANLEY
REG. U.S. PAT. OFF.

AMERICA BUILDS BETTER AND LIVES BETTER WITH STANLEY

This famous trademark distinguishes over 20,000 quality products of The Stanley Works, New Britain, Conn.—hand tools • electric tools • builders hardware • industrial hardware • drapery hardware • automatic door controls • aluminum windows • stampings • springs • coatings • strip steel • steel strapping—made in 24 plants in the United States, Canada, England and Germany.

In Canada: Steel Strapping Division, The Stanley Works of Canada, Ltd., Hamilton, Ontario



One of the two 104-in. Langston Slitters and Winders in the Glatfelter mill completing rewind. Roll drop table in foreground is up, ready to receive roll when ejected by the winder, and chocks are in raised position to stop the roll. Note console incorporating all major indicators and controls.

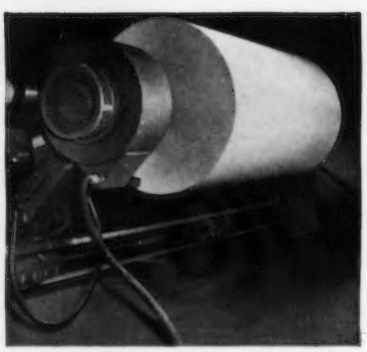
Langston Slitters and Winders turn out tight, even rolls at Glatfelter Mill

Two 104-in. Langston Slitters and Winders have been working in the new mill of P. H. Glatfelter Co., Spring Grove, Pa., for more than a year. They have proved themselves in round the clock production on grades from fine papers to book.

One of the most important features, according to the company, is the constant tension unwind control on the Langston Shaftless Roll Stand, which keeps the tension constant throughout the winding operation. Perfect rolls can be turned out from 9 to 100-lb. stock in roll widths from 7½ to 104 in.

The equipment can be quickly loaded and lined up on the back stand and is designed for easy threadup and gang slitter setting. Hydraulic roll ejectors move the finished rolls quickly from the winding position to the roll drop. Other features include shearcut slitters to eliminate dust; many interlocked controls for extra safety; automatic edge guide control to allow precision trim rewinding of narrow and salvage rolls.

Find out how Langston Slitters and Rewinders can benefit you. Write SAMUEL M. LANGSTON CO., 6th & Jefferson Sts., Camden 4, N.J.



Langston Shaftless Unwind Stand eliminates back-breaking, time-consuming task of hoisting heavy shafts into place. Hydraulically operated arms reach out, pick up the roll, and raise it into running position—a 1-man, pushbutton operation.

LANGSTON Leadership...by design

designed for greater size...ability

For surface sizing paper or board, water soluble GELVATOL resins offer dramatic increases in strength, transparency, grease resistance and printing qualities. Can be applied by any of the conventional methods: tub, size press, and calender stack.

Why not make a test run and notice the—

Increased Strength. GELVATOL sizing significantly increases the Mullen and fold endurance of rag stock and other high quality paper.

Increased Transparency. GELVATOL sizing improves the gloss, grease-resistance and transparency of glassine.

Increased Grease-Resistance. Surface sizing with GELVATOL makes paper grease-resistant; surface coating makes paper grease-proof. Improves wax holdout.

Increased Printability. GELVATOL imparts a smooth finish to paper. Improves ink holdout and contrast. Provides excellent varnish holdout.

GELVATOL is available in a wide variety of grades. Whatever your sizing needs it will pay you to write for full technical information to Shawinigan Resins Corporation, Department 6329, Springfield 1, Massachusetts.

SALES OFFICES: ATLANTA CHICAGO LOS ANGELES
NEW YORK SAN FRANCISCO

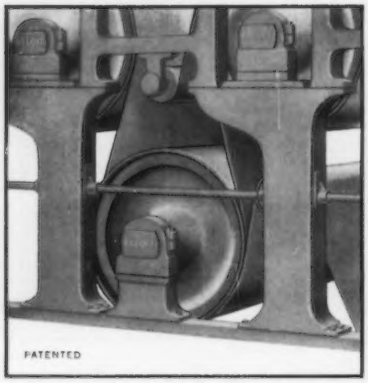
GELVATOL® *polyvinyl alcohol by*

SHAWINIGAN RESINS®

BELOIT UNIT MODERNIZATION

Is Drying Capacity equal to your

MODERNIZATION
WITH PROVED BELOIT UNITS
...CUTS COSTS
...INCREASES SPEED
...IMPROVES QUALITY

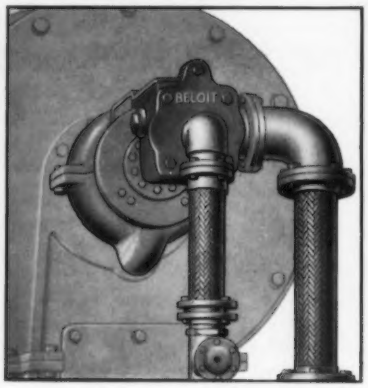


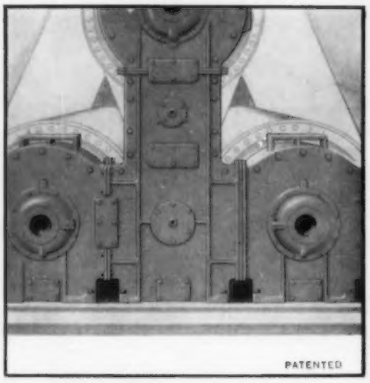
What makes a good dryer?

Experience, sound engineering principles, exacting quality control in the foundry and machine shop—all contribute to superiority. Beloit's advanced foundry and machining techniques bring papermakers a quality product at substantial savings. Beloit dryers are built for long life and trouble-free service. There is nothing that consistently transfers heat or doctors as well as fine cast iron.

Existing steam fits adequate?

Beloit steam fits have been proved in design through years of successful operation. The patented Beloit semi-balanced principle assures minimum wear on carbons and lower horsepower requirements at high steam pressures. Steam fits are a vital factor in efficient paper-machine operation. Rely on Beloit steam fits to give long life and outstanding performance.





Enclosed gear drive?

It's often a "fine line" of decision whether to keep an open-gear drive or convert to an enclosed gear drive. If your modernization program includes the latter, call on Beloit sales engineers to help plan the installation. Beloit enclosed gear drives offer these advantages: full-pressure lubrication, ease of maintenance, quiet running, safety, and operating cleanliness.

PROVED BELOIT UNITS FOR DRYERS: DRYER FELT ROLLS
SHEAHAN ROPE SYSTEMS WITH AUTOMATIC TENSION CONTROL
POST TYPE FRAMING • SWEAT DRYERS • TEFLON-COATED DRYERS
PAPER TENSION ROLLS • DOCTORS • FELT STRETCHERS

PORTA-PEELED

ONE OF A SERIES SHOWING TYPICAL BELOIT SOLUTIONS TO COMMON MILL PROBLEMS

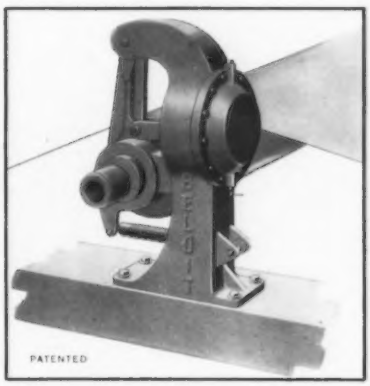
machine's PRODUCTIVE potential?

On an otherwise productive machine, allowable steam pressures often are a limiting factor. This usually can be solved without increasing the number of dryers by adding new dry-end dryers with increased steam pressure capacity. If a speed-up is anticipated, existing dryers often can be reconditioned to bring them into balance, and journals re-machined to accept anti-friction bearings. Where old journals are not suited for further machining, new heads and journals can be made to fit existing dryers.... Below are Beloit components that have proved to be of special value in dryer modernization. See where they fit into *your* modernization plans.

Condensate removal a problem?

Beloit offers several effective solutions to this problem. Beloit's syphons are designed to cover all ranges of operation insuring efficient elimination of condensate. In the majority of cases, kits are now available to convert your present system to a modern Beloit system. Take advantage of this opportunity to bring dryer efficiency up to desired levels.

PATENTS APPLIED FOR



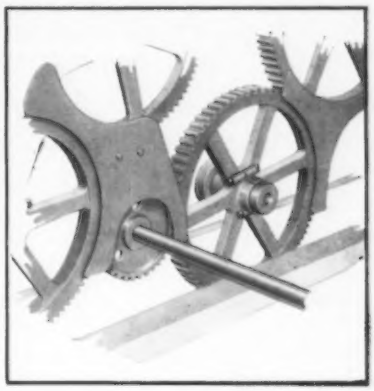
PATENTED

Felts running off periodically?

Faulty felt guides can cut production! Why not modernize with a low-cost Beloit automatic dryer felt guide now? The patented Beloit air diaphragm guide moves the guide roll smoothly, efficiently. Its rate of response is independent of felt speed; outside power supply and floating paddle reduce felt wear. The entire mechanism is simple, foolproof, rugged—requiring a minimum of maintenance. Models available for all dryer felt applications.

Open gears a problem?

If an anticipated speed-up program is being held back by your present open-gear drive, get the facts on Beloit dryer gears. Beloit's finely machined gears allow for that speed-up yet permit operation of an open gear arrangement. Call on Beloit to help work out the best arrangement to fit your particular needs.



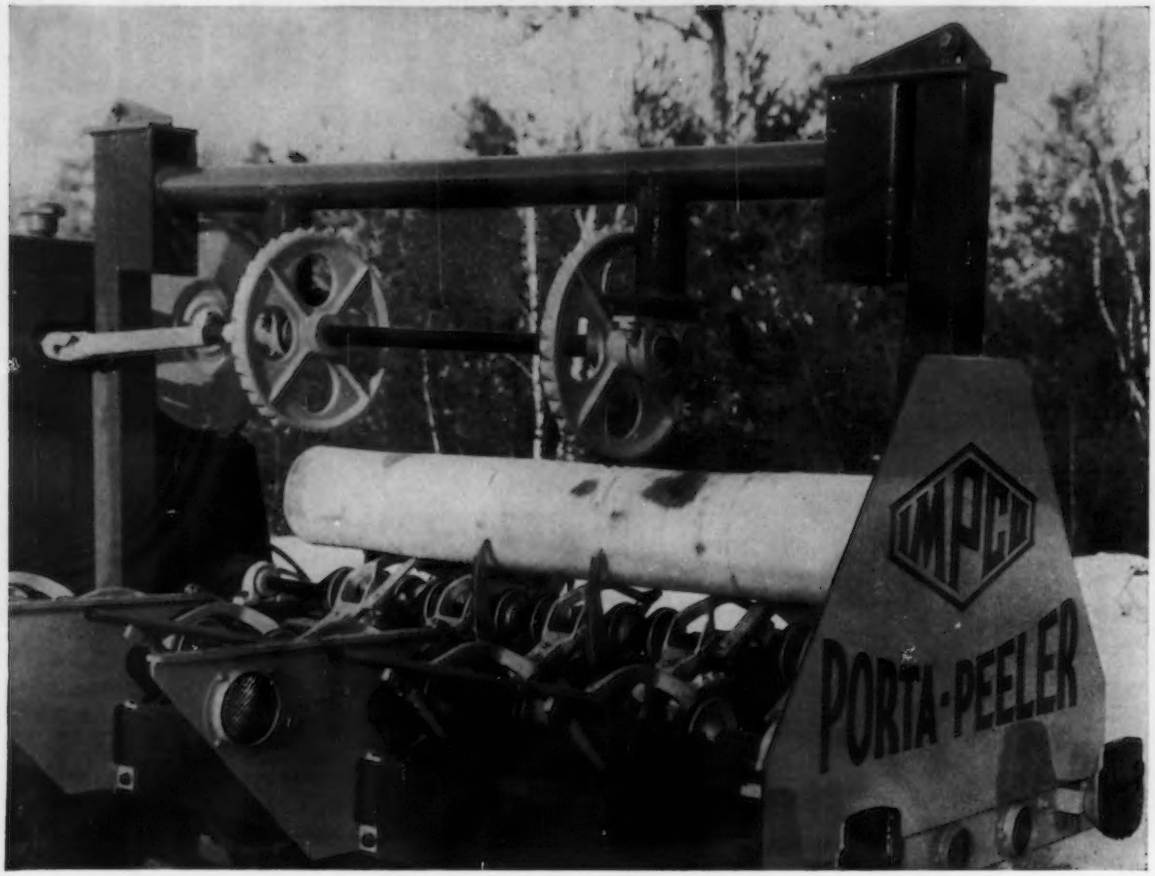
» **ACT!** *Write for details —or let a Beloit Sales Engineer help you modernize your Dryer Section. Beloit Iron Works, Beloit, Wis.*

BELOIT
PAPER MACHINERY

©1959 BELOIT IRON WORKS

your partner in papermaking

PORTA-PEELED PULPWOOD!



This is the Impco Porta-Peeler in action. Pulpwood contractors and users are receiving it with tremendous interest because of its efficiency and high capacity. Pulpwood suppliers can cleanly bark three to six cords per hour depending on log length. Crooked — knotty — frozen hardwoods — logs up to 26" in diameter? No problem! Porta-Peelers can be completely mobile for wood road operation or permanently installed in wood concentration yards.

IMPCO®

IMPROVED MACHINERY INC.

NASHUA, NEW HAMPSHIRE

In Canada, Sherbrooke Machineries Ltd., Sherbrooke, Quebec

Take it from a paper mill man who knows: foam, entrapped air and related problems can be solved effectively with Houghton's De-Airex, and at a *lower cost per ton* of paper!

No one variety of De-Airex will solve all foam troubles; therein lies the secret of our acceptance by mills from coast to coast—SERVICE. That is a story in itself; we call it "Personalized Paper Mill Service" . . . a story we'd like to tell you.

So (1) you get specialized attention to *your* mill's foam problems, (2) you get rid of foam or entrapped air which hurt paper quality, and (3) you save money. Three very good reasons for contacting Houghton and having a paper specialist talk it over with you.

E. F. Houghton & Co., 303 W. Lehigh Avenue, Philadelphia 33, Pa.

DE-AIREX

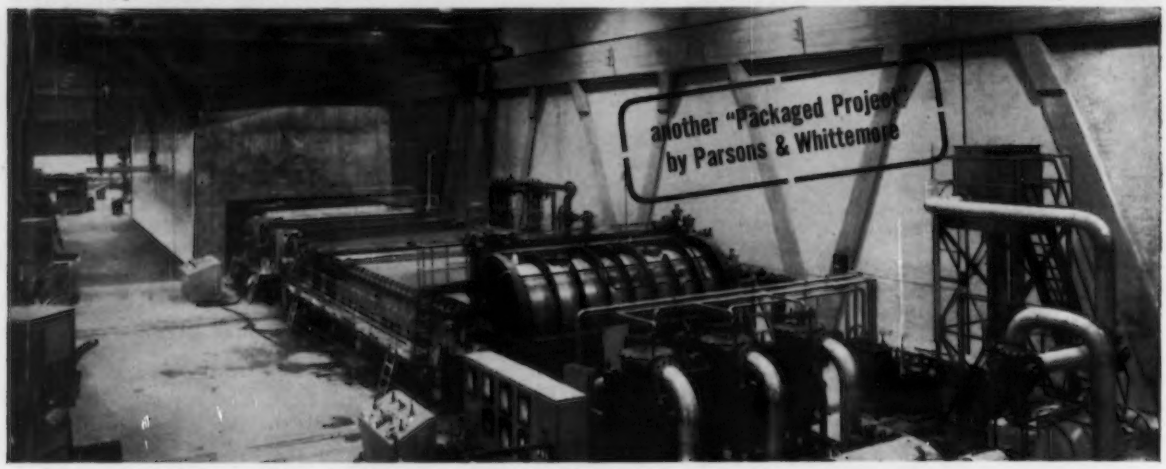
. . . a product of

E. F. HOUGHTON & CO.

Ready to give you on-the-job service

Philadelphia, Pa. • Chicago, Ill. • Carrollton, Ga. Detroit, Mich. • San Francisco, Calif. • Toronto, Canada

Fabricas de Papel Tuxtepec's modern air-conditioned pulp and paper mill is laid out for straight line flow of materials from the woodyard to the finished newsprint shipping dock. Shown here is the Black-Clawson newsprint paper machine with its three Selectifier screens, pressurized headbox, 185-inch wide cantilever Fourdrinier followed by two suction presses and a 39-unit dryer section.



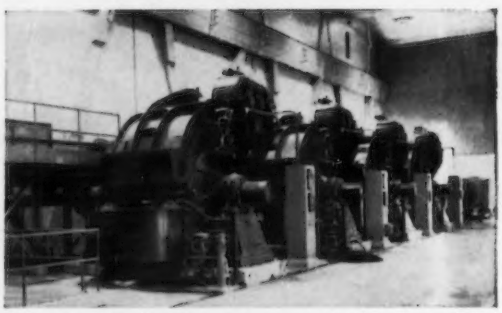
NOW PRODUCING HALF THE NEWSPRINT NEEDS OF MEXICO

Mexico's first newsprint mill, which started operation at the end of 1958, is now producing 100 tons of newsprint daily from local pine. The entire $15 million project—planning, financing, plant equipment and initial operation of the mill—was handled by the Parsons & Whittemore-Lyddon Organization. The mill was designed by Sandwell & Co., Ltd. on behalf of Fabricas de Papel Tuxtepec S.A.

With more than 100 years' experience in pulp, paper and machinery...with manufacturing facilities on three continents...and with engineering and financial associates throughout the world, we can render *any* or *all* of the following services:

1. *Conduct* a thorough technical and economic field survey and prepare a complete appraisal report.
2. *Assist* the local group in financing the project.
3. *Design* the complete project in cooperation with the world's leading consulting engineers.
4. *Produce* and deliver all pulp and paper making machinery and other equipment which is not locally available.
5. *Supply* skilled personnel to ensure efficient operation until the local staff has been trained.
6. *Cooperate* in procurement of foreign raw materials and sale of the mill's output on world markets through our own branches.

For full information on our services, write our nearest office.



All equipment for Tuxtepec was supplied under a global contract by the Parsons & Whittemore Organization. Four Roberts Grinders, each with a 3,000 horsepower, 257 rpm motor, were manufactured by The Black-Clawson Company, Pandia Division, Hamilton, Ohio.

Groundwood pulp from Mexican pine is blended with chemical pulp. Black-Clawson Hydrafiners and a No. 6 jordan prepare the stock for the paper machine.

THE PARSONS & WHITTEMORE/LYDDON ORGANIZATION

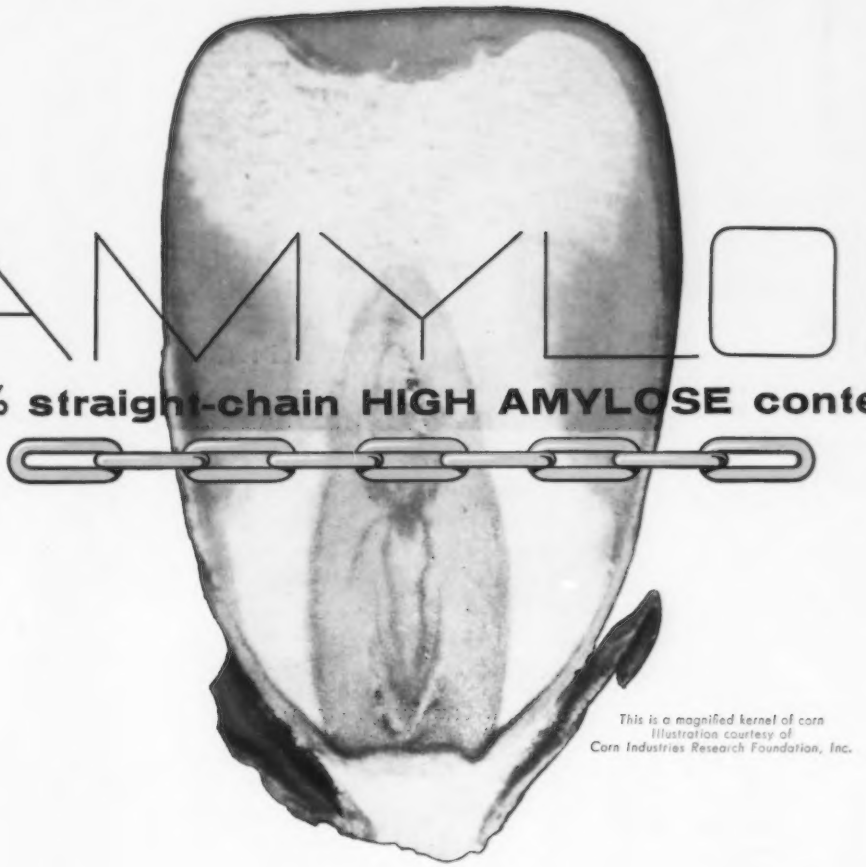
World leaders in the development of pulp and paper mills for the use of local fibers

18-19 Savile Row, London W. 1, England — 5 Rue Jean Mermoz, Paris 8°, France

250 Park Avenue, New York 17, N. Y.

AMYLON

55% straight-chain HIGH AMYLOSE content



This is a magnified kernel of corn
Illustration courtesy of
Corn Industries Research Foundation, Inc.

A RADICAL GENETIC CHANGE

science and nature synthesize a new chemical polymer

NOW AVAILABLE in semi-commercial quantities. A radically altered natural starch polymer that contains 50-55% amylose —the straight-chain molecular component of starch.

This is the first major genetic advance leading to a potentially feasible starch containing 100% amylose. It's an exciting genetic achievement. Until now, the amylose content commonly available never exceeded 27%.

Geneticists have worked for many decades to develop special qualities in hybrid corn. Such as high yield, drought and insect resistance. A change in chemical structure was first accomplished industrially by the breeding of corn containing 100% amylopectin which NATIONAL introduced as AMIOCA in 1943. High amylose corn represents another major industrial accomplishment in the new area of plant breeding intended to alter the polymer structure of the starch itself which NATIONAL is introducing as AMYLON®.

Milled from high amylose corn in the same way as ordinary starch, AMYLON represents a marked step towards the unusual properties of amylose itself: Film formations, with greater strength than ordinary starch films. With improved water, grease and oil resistance. Flexibility. Unusually strong gels. Adhesiveness.

To the inquiring mind, these unusual properties suggest a variety of applications: Soluble and digestible packages for instant coffee, meats, vegetables, fish, fruit. Butter. Vegetable shortenings. Soluble packages for soap powders and insecticides. Grease and oil resistant coatings. Water and humidity resistant binders. Improved textile sizes and finishes, etc.

An invitation is extended to all who are interested in exploring the properties of this new high amylose starch.

Address: Amylon Starch Division, National Starch and Chemical Corporation, 750 Third Avenue, New York 17, N. Y.

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STARCH and CHEMICAL
CORPORATION

Sure Source of top-quality plate work . . .

American Bridge at Orange, Texas.

If your business requires equipment made from steel plate—heavy-wall pressure vessels, tanks, stacks, bins, pipe, etc.—American Bridge invites your attention to its recently modernized plate fabricating facilities at Orange, Texas.

The plant itself, one of the largest in the country, is a huge two-aisle building, 177′ wide and 750′ long, with crane runways extending 270′ and 200′ at either end. Equipment includes seven cranes capable of lifting, in combined use, over 100 tons.

Fabricating facilities include large car bottom-heating and stress-relieving furnaces, heavy-plate bending rolls, a variety of presses and press brakes, the latest in welding and X-raying equipment, plate shears, edge planers, boring mills and drills.

These facilities enable American Bridge to handle practically any plate job regardless of size. And great capacity permits the handling of several large jobs simultaneously.

Efficient and economical construction service, too!

American Bridge has the most complete range of construction equipment in the industry, plus skilled personnel backed by over fifty years of experience. *Anything we fabricate, we can erect.*

And, because of the strategic location of our Orange plant on water, rail and truck routes, you can count on fast delivery and low shipping costs.

For top-quality plate work, contact any of the offices listed below. Or write for our booklet which describes the facilities and services available from our Orange plant.

USS is a registered trademark

USS American Bridge Division of United States Steel

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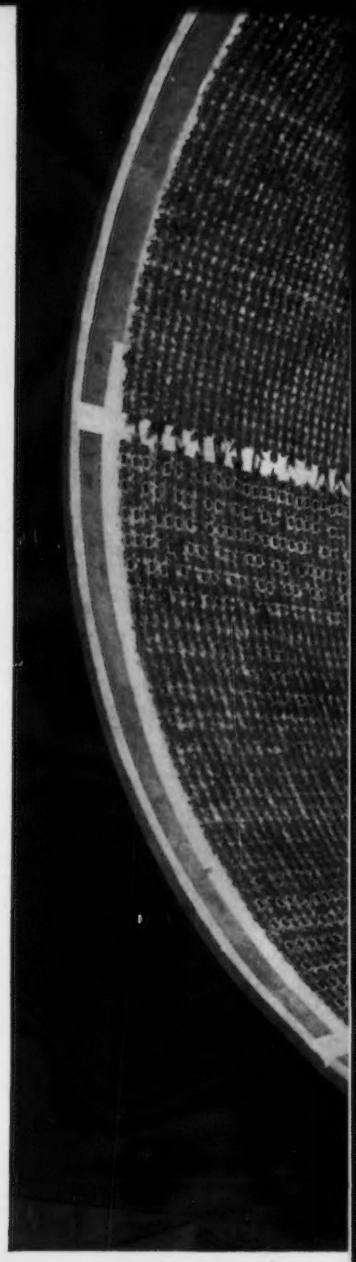

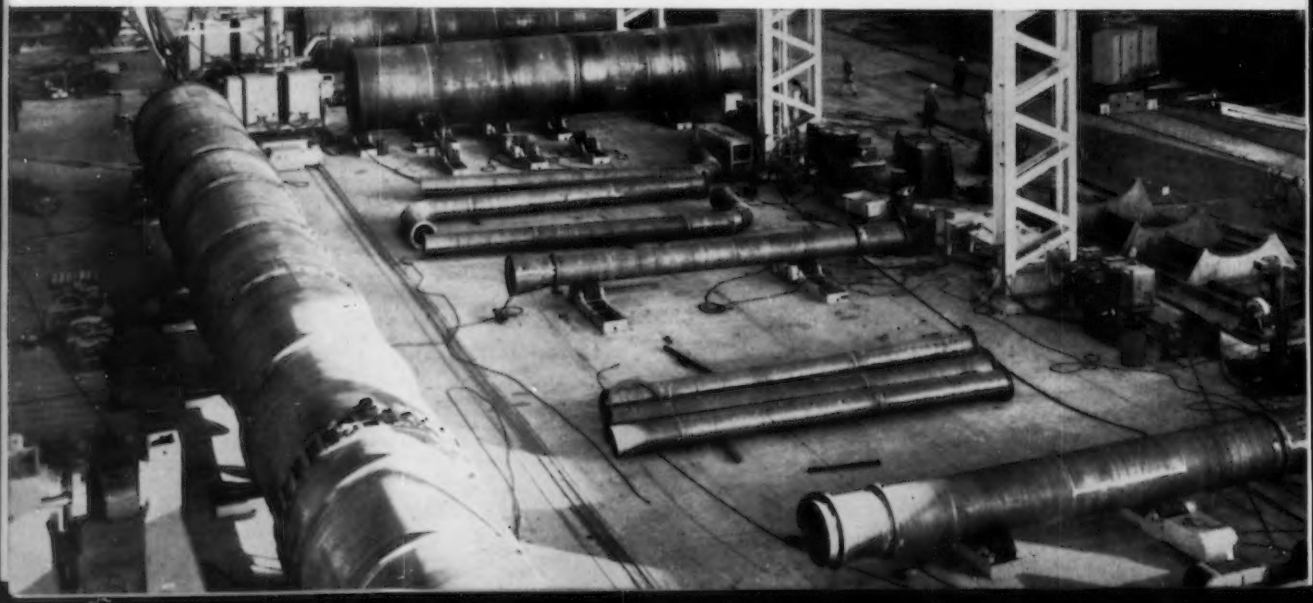

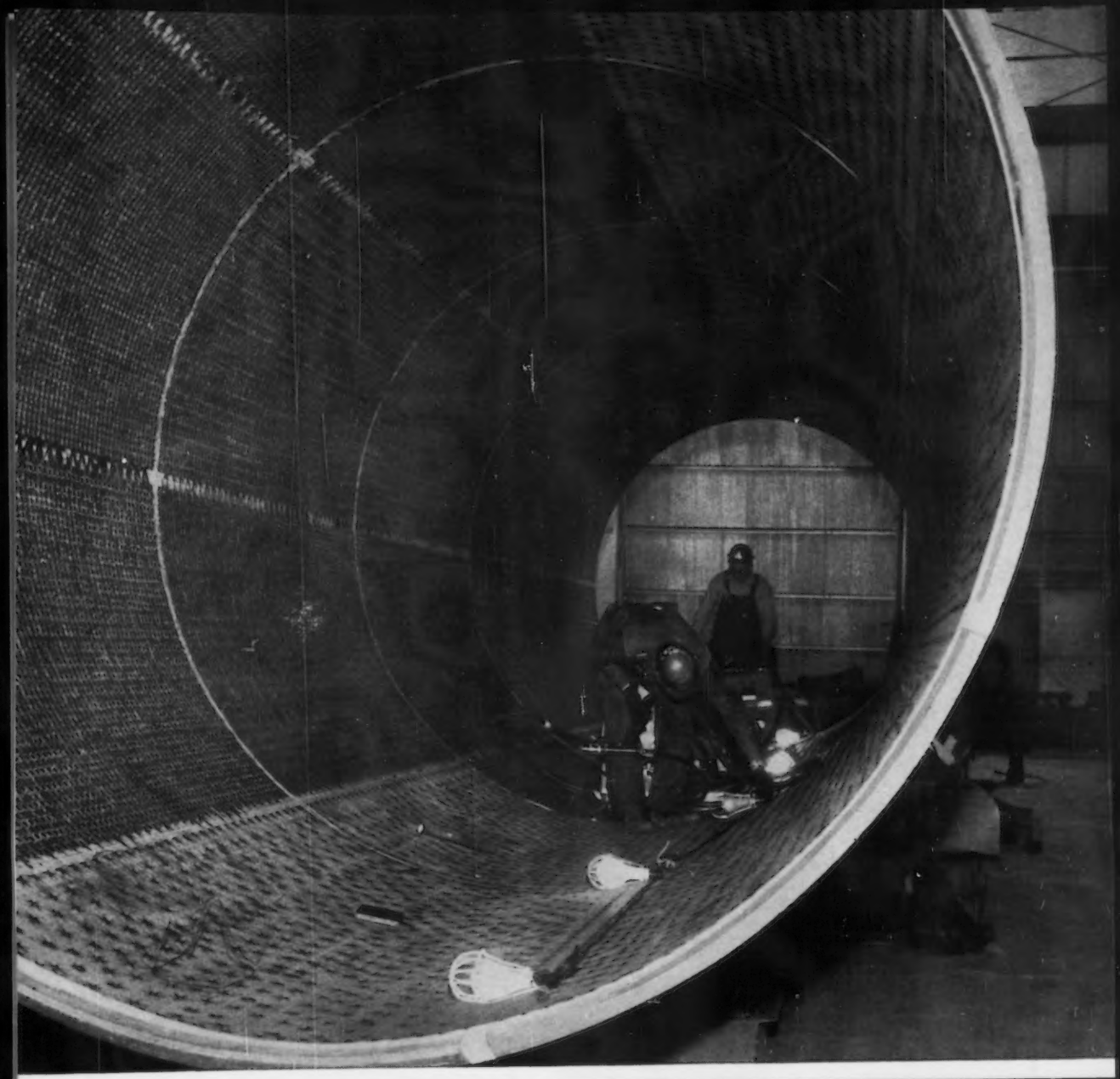

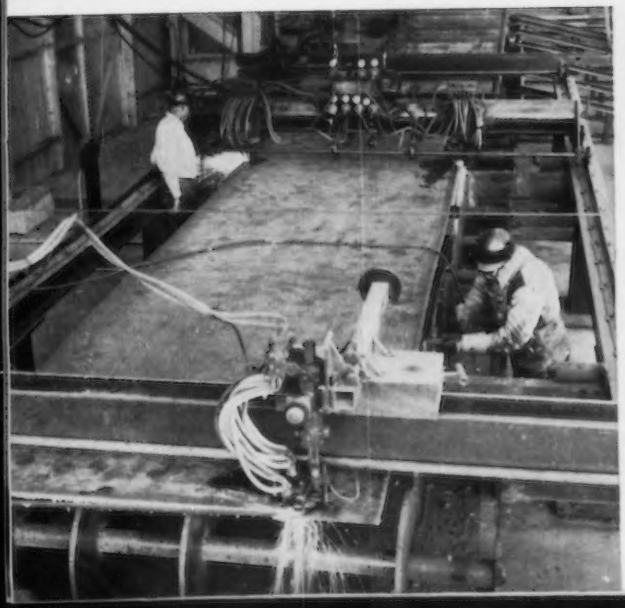

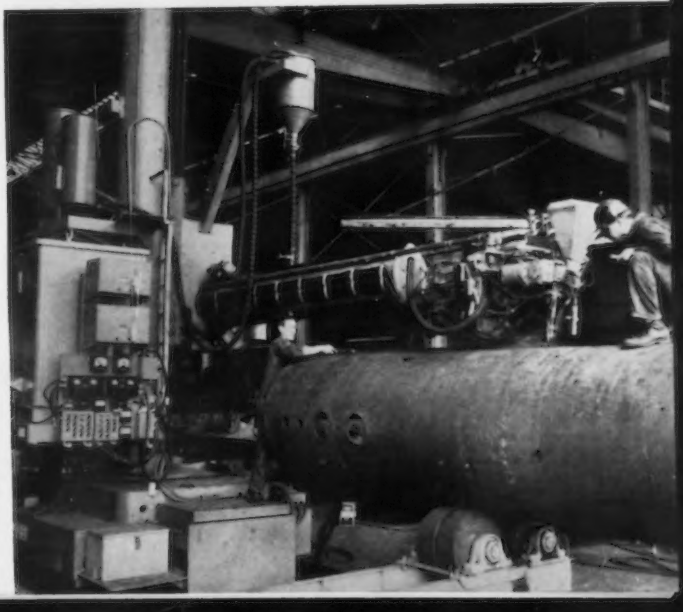

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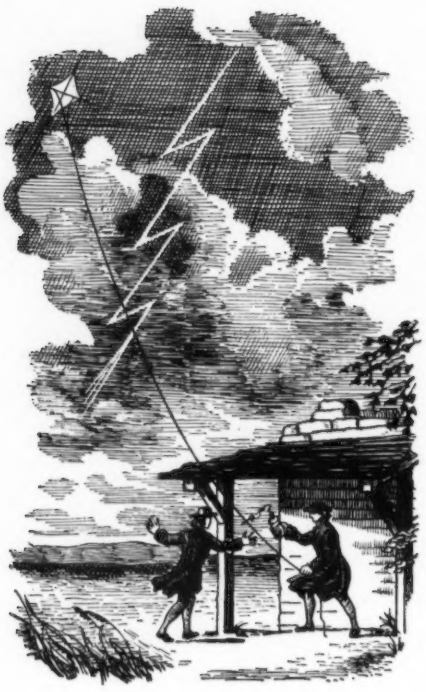

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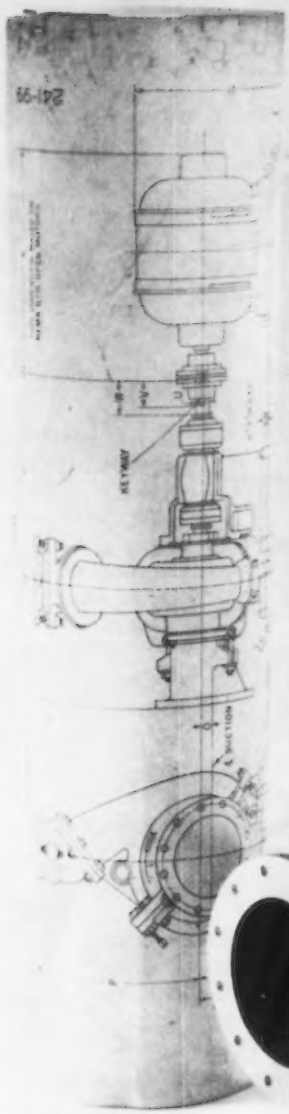

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As you would expect from its chemical purity. Solutions are free of turbidity, lumps and clods —94% as clear as distilled water by actual measurement.
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Westvaco ash is typically 99.88% Na_2CO_3... about as pure as a tonnage chemical can be. And it's ammonia-free, low in sulfates, chlorides, trace minerals and insolubles.
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Only 10 ppm Fe_2O_3... less than the weight of four carpet tacks per ton!
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Trends

News Page Indicates Business Trends

Business trends are indicated on the first news page (25). There are two items on new paper machines, one on a new pulp mill and one on merger of two important companies in our industry.

Corr. Boxes Up 18% in First Half

Production of corrugated shipping containers in the first six months of this year ran 18% ahead of the same period in 1958. The figures from the Fibre Box Ass'n. on which the above was determined, also include production of corrugated board for other purposes.

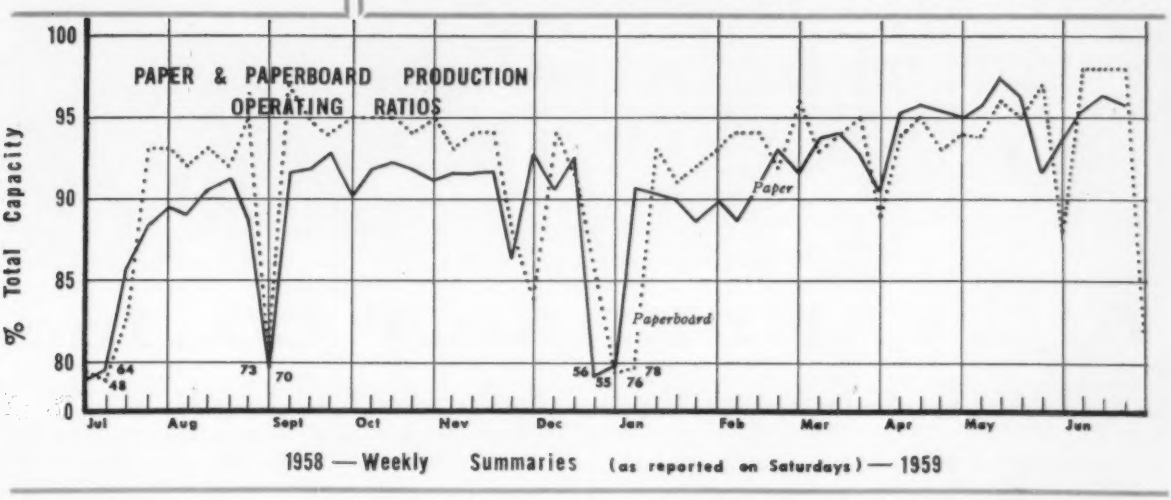
Materials Handling Offers Biggest Saving

"The *materials manager* with an opportunity to coordinate purchasing, handling, and shipping costs, can do more to reduce paper making costs than anyone else in your organization." This is the concluding statement in an extensive and authoritative article on materials handling by D. S. Adams which begins on page 40 of this issue.

Jan.-June Production Sets New Record High

Paper and board production for January-June 1959, as estimated by the APPA reached a new high of 17,100,000 tons. This was 14% above the first half of last year and 6% above the previous high established in the first half of 1956. Paper production was 12% ahead of the first half of last year and board production was 16% ahead. Building paper and board at 17% showed the biggest increase. The following table gives data for 1956, 1958 and 1959 in thousands of tons:

				Per Cent Change	
	1956	1958	1959	59/58	59/56
Paper	7,025	6,669	7,450	+12	+6
Paperboard ...	7,440	6,869	8,000	+16	+8
Building Paper and Board ..	1,608	1,412	1,650	+17	+3
Total	16,073	14,950	17,100	+14	+6



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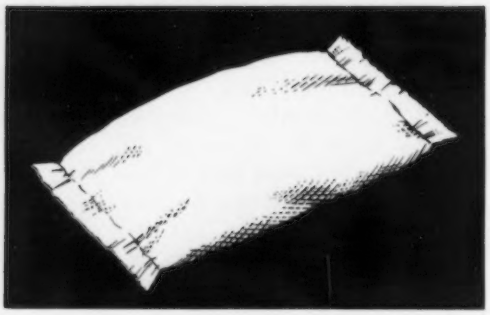

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PAPER TRADE JOURNAL

WEEK OF JULY 20, 1959

New Machine for I-P Pine Bluff Mill

Plans for addition of a third paper machine at International Paper Co.'s Pine Eluff mill are announced. The original two units at the Pine Bluff mill began operation in July, 1958, producing newsprint and bleached kraft board.

The new machine, a 209-inch trim Beloit, will be equipped to manufacture lightweight directory papers and other groundwood printing grades to meet the expanding demand for these grades in the South and Southwest. It will have a rated capacity of 50,000 tons annually. In addition to the construction necessary to house the machine itself, there will be related additions to the groundwood mill and a new recovery boiler will be added to the power plant.

The new unit is expected to be completed by January 1961. Total cost for the expansion program is estimated over $13,000,000.

International Paper is currently purchasing approximately 85 per cent of the wood used at Pine Bluff from independent tree farmers in Arkansas. The wood is delivered through 11 mechanized pulpwood yards.

Site Clearing Started for Nova Scotia Mill

Nova Scotia Pulp, Ltd., on June 10, formally accepted the deed to a site for the mill near Point Tripper, Nova Scotia, from the provincial government.

Work has begun on clearing the mill site with construction planned to begin early next year. As previously reported here, the plant will make market pulp in a special sulphite process developed by Stora Kopparberg of Sweden. Stora is associated in the development of this project.

COMPLETION OF AN AGREEMENT between Black-Clawson and the KVP Company, Ltd., for supplying major equipment for KVP's paper mill expansion at Espanola, Ont., was accomplished recently at Black-Clawson International, Ltd., London, England. Left to right are: Barrie Dixon, managing director, BCI; J. F. McCallum, manager of manufacturing, KVP Co., Ltd., Espanola, Ont.; Jack Buechler, manager, Black-Clawson (Canada) Ltd., Montreal; Percy H. Fogg, sales director, BCI; Frank Peterson, president, The Black-Clawson Co., New York.

St. Regis Proposes To Acquire Cornell

Negotiations are under way for St. Regis Paper Co. to acquire the stock of Cornell Paperboard Products Co. As a result of these negotiations, St. Regis has agreed to file a registration statement with the Securities and Exchange Commission which will outline the proposed exchange of Cornell shares for those of St. Regis. It is estimated that the proposed registration statement will be filed not later than July 31.

Cornell Paperboard has board mills in Milwaukee and Cornell, Wis., and box plants in Milwaukee and Chicago, Ill.

New President for Deerfield Glassine

At the annual meeting of Deerfield Glassine Co., Monroe Bridge, Mass., the retirement request of W. A. Wylde, president, was accepted with regret. Mr. Wylde who has served Deerfield for 24 years in various capacities will continue as a director of the company and will be retained as a consultant.

P. E. Hodgdon will continue as chairman of the board and T. Richard Probst was elected to succeed Mr. Wylde as president. Mr. Probst rejoined Deerfield in November 1958, after holding executive positions at Brown Co., Eastern Corp. and Columbia River Paper Co.

All other officers were re-elected as follows: secretary, P. S. Dickinson; vice president, E. J. Costigan; treasurer, W. K. Prutzman; and asst. secretary, M. M. Mason.

Richard Emery assumed the duties of sales manager and Charles Hill becomes mill manager effective July 1. Mr. Emery, a graduate of Williams College, has been associated with Deerfield for the past 10 years and advances to sales manager from his present position of assistant sales manager.

Mr. Hill, a chemical engineering graduate of Ohio State University, joined Deerfield two years ago and was previously associated with Sorg Paper Co.

MEMBERS of the AIEE Pulp & Paper Subcommittee attending the conference: Front Row, Left to Right—S. Anderson, West Virginia Pulp & Paper Co.; S. J. Campbell, Westinghouse Electric Co.; J. S. Kirkland, Rome Kraft; C. H. Hudson, General Electric Co.; C. L. Eletson, Alton Box Board; S. A. Bobe, Westinghouse; D. C. Pier, Beloit Iron Works; T. A. Likos, Westinghouse. Second Row, Left to Right—M. L. Perkins, Fraser Paper Co.; R. J. Farrell, Reliance Elec.; J. B. Grady, Oxford Paper; W. H. Buford, Continental Can; E. H. Overby, Union Bag Co.; C. B. White, Allis-Chalmers; G. E. Shaad, General Electric; J. M. Yarbrough, Mead Corp.; M. J. Osborne, Bowaters Southern Corporation.

AIEE Pulp and Paper Subcommittee Meets at University of Maine

The Fifth Annual Conference on Electrical Engineering as applied to the pulp and paper industry was held during June 18—19 at the University of Maine. The conference was attended by 150 ranking electrical engineers from the mills and allied industries.

BEST WISHES of Canadian International Paper Co. are tendered to Roy L. Campbell, left, retiring secretary, by president Vernon E. Johnson. Mr. Campbell received a silver tray from the board of directors and holds a testimonial scroll marking his long service with C.I.P. which he joined in 1925. He became secretary in 1931. His association with the pulp and paper industry dates back 45 years.

Addresses of welcome were given by Professor W. J. Creamer, of the School of Electrical Engineering, and Professor L. C. Jennings, School of Chemistry, both of the University of Maine. Dr. J. L. Ober, president, of Maine Pulp and Paper Foundation, gave luncheon address.

During the subcommittee meeting it was determined that the 1960 conference would be held in Gainesville, Fla., probably early or mid-April. The meeting to be held in 1961 will likely be in the Mid-Western States area.

The program June 18th consisted of presentations describing "Short Circuit Calculating Boards," "Great Northern Paper Company's Power System," Magnetic Amplifier Power Supplies for Adjustable Speed Drives," "Control Systems for Industrial Nuclear Power Plants," and "High Voltage A. C. Motor Insulation." The subjects covered June 19th were "Lightning Protection for Paper Mills," "Cable Application in Paper Mills," "Regulating Systems for the Paper Industry."

C. H. Hudson, General Electric Co., Atlanta, Ga., is chairman of the AIEE Pulp and Paper Industry Subcommittee. E. K. Murphy, Rayonier Inc., Jessup, Ga., is vice chairman, and C. L. Eletson, Alton Box Board Co., Alton, Ill., is secretary.

PHILIP E. BOWDEN, South Brewer, Me., who has been awarded the Paper Trade Journal freshman scholarship at the University of Maine. This scholarship in the amount of $750 is awarded annually (and may be renewed for the sophomore year) to a deserving student who plans to take the course in pulp and paper technology at the University of Maine.

Paper Clothes For Hospital Use

Patients in hospitals may sleep in paper gowns on paper sheets and be treated by doctors and nurses wearing paper uniforms, if tests at Brooke Army Medical Center at San Antonio prove successful.

The story is that paper items would be useful when laundry facilities were scarce and during emergency shortages of conventional cloth equipment and clothing.

Items being studied included surgeons' caps, gowns, jackets and trousers; nurses' scrub gowns, caps and uniforms; operating room boots, patients' gowns; dental bibs and surigal masks.

Paper and Board Production

According to the American Paper and Pulp Ass'n., the ratio of the United States production to mill capacity for the week ending July 4, 1959, was 70.5 per cent compared with 95.8 per cent revised for the preceding week. The ratio was 49.2 per cent for the corresponding week a year ago.

The paperboard production ratio for the week ending July 4, 1959, was 82 per cent compared with 98 per cent for the preceding week and 61 per cent for the corresponding week a year ago.

(Detailed statistics on page 52.)

PAPER PEOPLE

E. J. Kiddie

P. M. Coy

O-I Announces Promotions at Jacksonville

E. J. Kiddie, production manager at the Owens-Illinois plant at Jacksonville, has been named assistant general manager there.

Succeeding Mr. Kiddie as production manager will be Peter M. Coy, for the past two years supervisor of corrugating, carton assembly, and statistical quality control for the Libbey Glass Division of O-I.

Mr. Kiddie, a native of North Fond Du Lac, Wis., served as production manager at the company's box plants at Madison, Ill., and Detroit before moving to Jacksonville. He was assigned in various engineering capacities at the company's box plant at Tomahawk, Wis., and also at the Chicago box plant, after joining the company in 1950.

Mr. Coy's association with Owens-Illinois began in 1949 as an industrial engineer at the company's Bridgeton, N. J., glass container plant. He served later as administrative assistant to the vice president and production manager of the company's glass container division, and as personnel administrator for the Kaylo Division. He was assigned in 1954 to the company's administrative industrial engineering department, and in 1956 joined the Libbey Glass Division as supervisor of its corrugating and carton assembly operations.

Posson Named Manager Of Thames River Plant

Gail Posson, previously assistant plant manager at the Thames River, Conn., plant of Continental Can's Boxboard and Folding Carton Division, has been appointed plant manager at this location, it was announced by O. M. Miller, division general manager of the Eastern region. He replaces John H. Fettinger who is retiring after having served with the Robert Gair organization for the past 47 years.

Mr. Posson started with Gair in May 1951 as an industrial engineer at its Chicago plant and moved to the Thames River plant position in October, 1954.

Wilkin Resigns As N.P.T.A. President

King Wilkin has resigned as president of The National Paper Trade Ass'n., and in accordance with the By-laws of the association, Floyd H. Blackman, Stone & Forsyth Co., Cambridge, Mass., is serving as acting president until the semi-annual meeting of the organization in Chicago in September.

Mr. Blackman has just announced the appointment of Gardiner Young, president of Bancroft Paper Co., Monroe, La., to the post of acting vice president of the Wrapping Paper Division.

Mr. Young, a member of the N.P.T.A. Executive Committee since 1958, co-founded the Bancroft Paper Co. in 1933, has served as a member of the Committee for Wrapping Papers for seven years, and has been a member of numerous Merchant-Mill Advisory Committees, including Southern Advance Div., Continental Can Co.; Mid-States Gummed Paper Div., Minnesota Mining & Manufacturing Co.; and Dixie Cup Div., American Can Co.

Consolidated WP&P Announces Promotions

Promotion of three men at Biron Division, Consolidated Water Power & Paper Co., Wisconsin Rapids, have been announced.

Bert Nason has been appointed to the new position of job expediter in the maintenance department where he will work under the direction of Phillip Nobles, maintenance superintendent. Edward Weil will succeed Mr. Nason as night superintendent while Emery Ott becomes the new relief night superintendent.

F. J. Dau

Dau Joins Champion Paper As Special Consultant

Maj. Gen. Frederick J. Dau has joined The Champion Paper and Fibre Co. as special consultant to Karl Bendetsen, vice president—pulp and paper manufacturing.

General Dau's assignment at Champion will be in the areas of inventory control, storage, and distribution and movement of supplies, materials and end products. "Outstanding managerial ability" in similar fields won for General Dau the nation's highest peacetime service award, the Distinguished Service Medal. The award, stated that his "achievements have resulted in reduced stockage objectives . . . a revised budget buy program, and new concepts of management" in the supply field.

A. P. R. Conliffe

Conliffe Gets New Post At Howard Smith Mills

Allan P. R. Conliffe has been appointed assistant to the manager of pulp and newsprint sales of Howard Smith Paper Mills, Ltd., and subsidiary companies, effective July 1. In his new responsibilities, Mr. Conliffe will act as assistant to the general sales manager of Donnacona Sales Corp.

Mr. Conliffe has been associated with the Howard Smith organization for over 21 years. His grandfather started in 1914 with the old Toronto Paper Co. and to date 40 members of his immediate family have been, or still are, employed by the company.

Since joining the company in 1938 Mr. Conliffe has had varied and extensive experience in the Cornwall Mill where he attained the position of pulp shipping supervisor in 1948. In 1953 he was transferred to the Montreal office of the pulp sales department.

Scott Promotes Four

Scott Paper Co. recently announced four promotions at the Mobile, Ala., plant.

James A. Peacock and John F. Warren were promoted to the position of finishing shift supervisor.

Price Williams will assume the duties of roll shipping foreman, and Leroy V. Steber will become sheet and pulp shipping foreman.

C-Z Announces Changes at St. Helens Mill

Howard C. Hall has been named assistant resident manager of the Crown Zellerbach paper mill in St. Helens, Ore.

Seven other promotions were also announced: Peter P. Taranoff was named paper machine superintendent; P. B. Pasero, machine and beater room supervisor; Charles E. Young, converting room and shipping superintendent; H. E. Franson, assistant pulp mill supervisor; Chris Van Leeuwen, technical assistant to pulp mill superintendent, and Bert Zurcher, assistant technical supervisor.

Two Step Up at Champion Paper & Fibre

The promotion of two men in the fibrous and chemical preparation department at the Champion Paper and Fibre Co. has been announced. Ralston Campbell has been appointed general supervisor of the department, and Floyd Gray has been promoted to general foreman, waste paper and fiber section of the department.

Lippard Joins Carey Mfg. In Quality Control Div.

Frank W. Lippard has been appointed assistant manager of the quality control division of The Philip Carey Mfg. Co. He will assist H. W. Greider, quality control manager, with quality control and inspection in Carey's operations in Lockland; Perth Amboy, N. J.; Houston; Memphis; and Wilmington, Ill. Mr. Lippard was an industrial engineer with Schenley Distillers before joining Carey in 1950 as industrial engineer in the Lockland asphalt roofing department.

Thomas Hackett

Gardner Division Names Hackett Sales Rep.

Thomas Hackett has been named sales service representative in the sales department of The Gardner Division, Diamond Gardner Corp., Middletown, Ohio. He will perform special assignments for the vice president in charge of fabricating sales. Mr. Hackett started with Gardner in 1933 as a gluer helper, and later became foreman of the gluing department at the company's Lockland plant. In 1954 he was promoted to assistant to the Lockland plant manager.

W. L. Schnorbach

Schnorback to Manage New Continental Can Mill

William L. Schnorbach has been appointed plant manager of Continental Can Co.'s new bleached board mill now under construction at Augusta, Ga.

Mr. Schnorbach had previously been manager of special process and project engineering with the Gair group, working on plans for construction of the mill. He had joined the Robert Gair Co. (which merged with Continental Can in 1956) in May 1955 as special representative on containerboard production, progressing from there to become assistant to the director of development, chemical pulp and paper, and then to his Process and Project Engineering assignments.

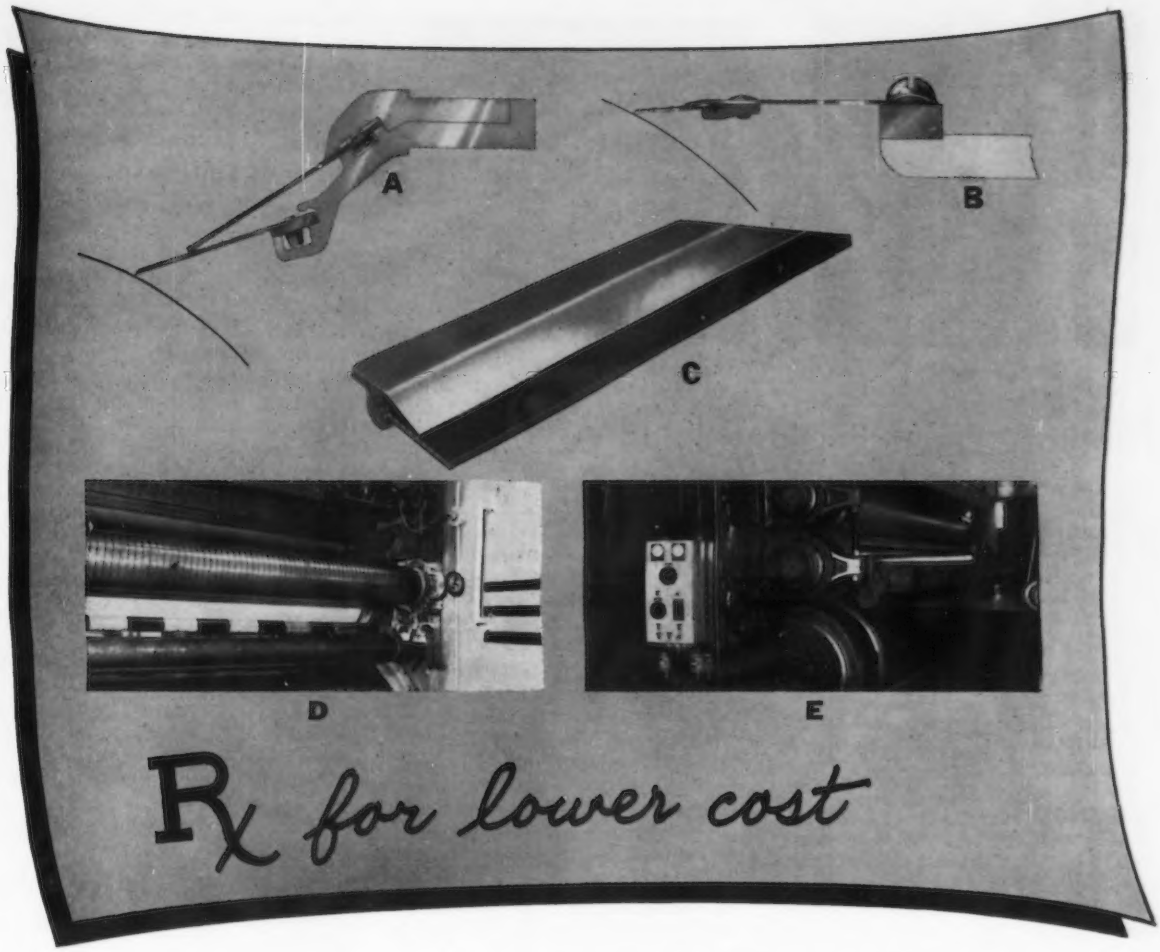
A graduate of the University of Michigan with a degree in chemical engineering, Mr. Schnorbach has spent his entire business life in the paper industry.

The new bleached board mill which he is to manage will produce 350 tons per day of bleached paper and board for use in packaging food products. The mill is expected to be in operation during the last quarter of 1960 with the initial 350-ton capacity to be provided by a 216-inch trim Fourdrinier paper machine.

Thilmany Pulp Promotes MacDonald and Duthie

Donald J. MacDonald, formerly in charge of the decorated paper sales section at the home office of the Thilmany Pulp and Paper Co., Kaukauna, Wis., has been transferred to the firm's Chicago office as a sales representative. He joins the Midwest sales division of the company, headed by A. R. Miller.

Robert W. Duthie, it was also announced, was promoted to head the decorated papers section, in which he had worked for several years.



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B Vickery Hi-Flex Doctors provide super flexibility for hugging every inch of calender or supercalender rolls continuously.

C Vickery RS Type Doctors are designed for quick, easy blade changes even when space is limited.

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Keep roll surfaces constantly clean and smooth — to do their best work at lower costs.

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BIRD MACHINE'S 50th YEAR OF SERVICE TO INDUSTRY

William Feick, Jr.

J. E. McCauley

Flintkote Elects Feick as Sales V-P

William Feick, Jr., formerly vice president and treasurer of The Flintkote Co., has been elected vice president in charge of sales for the company's Flintkote Division. In his new position, Mr. Feick will supervise sales of building materials, Insulrock, Van-Packer factory-built chimneys and stacks, flooring and adhesives, and industrial products. Flintkote manufactures America's broadest line of building products for home and industry.

Mr. Feick joined Flintkote in March 1956 when he was elected treasurer. In April 1958 he was elected to the additional office of vice president. Prior to his association with Flintkote, he was an officer of the Crocker-Anglo National Bank of San Francisco.

James E. McCauley, formerly a vice president and treasurer of Orangeburg Manufacturing Co., a Flintkote division, has been named treasurer of Flintkote to succeed Mr. Feick. Mr. McCauley has spent his entire business career with Orangeburg since leaving the Army after World War II.

Gene G. Curry, secretary of the Blue Diamond Division, has been elected secretary of Flintkote to succeed George K. McKenzie who will devote his full time to his increasing duties as executive vice president. Mr. Curry had been secretary of Blue Diamond since 1956, prior to which he had served as legal counsel since 1935.

All three officers will make their headquarters at Flintkote's executive offices in New York City (at 30 Rockefeller Plaza).

Three Promotions Made At Wisconsin Rapids

Promotion of three men at the Wisconsin Rapids Division of Consolidated Water Power & Paper Co. has been announced.

Jack Chinn has been appointed technical supervisor, succeeding James Schoettler who has accepted a position with another paper manufacturing firm. Leo Reiman will succeed Mr. Chinn as assistant paper machine superintendent. Donald Marks has been named assistant to the paper machine superintendent.

Mr. Chinn, a graduate of Cornell College, attended the Institute of Paper Chemistry before joining the company in 1954. Mr. Reiman began his employment with the company in 1933 and has been serving as enamel paper tour foreman. Mr. Marks, who has been with the company since 1935, has been employed as technical assistant in the technical department since 1957.

Brownville Paper Names New Sales Manager

Herbert S. Granstrom has been appointed sales manager of Brownville Paper Co., Brownville, N. Y., resigning his position as manager of mill orders and mill sales at Chemical Fine Paper and Board Division of Standard Packaging Corp., Holyoke.

Saunders Now Field Engineer at Westvaco

M. Keith Saunders has been promoted to the post of field engineer with the general maintenance and construction department of West Virginia Pulp and Paper Co., in Covington.

Mr. Saunders has been with the paper manufacturer for nine years, having started as a finisher helper at the carbon plant. In 1955, he was promoted to waste treatment plant operator at the paper mill's large pollution abatement facility.

In 1956, Mr. Saunders was promoted to the post of junior draftsman, the post he held until his recent advancement.

Diamond Gardner Names Barber to Key Post

Diamond Gardner Corp. has announced the appointment of Fred Barber as director of manufacturing and technical services for The Gardner Division.

Mr. Barber, formerly assistant to the division president, will be responsible for the traffic, engineering, purchasing, industrial engineering, production planning, and research and development departments. In addition, the Diamond Gardner subsidiaries, Dayton Paper Stock Co., Dayton, and Yoder Engraving Co., Middletown, will report to him.

Beginning his Gardner career in 1953 as superintendent of Gardner's Middletown carton plant. Mr. Barber was promoted to manager, Middletown manufacturing division, in 1954. A year later, he became manager of the Lockland manufacturing division. He held the latter post until his appointment as assistant to the division president in May 1958.

Fred Barber

Mr. Barber was graduated from the New York State College of Forestry, Syracuse University, with B.S. and M.S. degrees in chemistry. Before joining Gardner, he held responsible posts with Container Corp., Philadelphia; Stein, Hall & Co., New York City; and American Coating Mills, Elkart, Ind., and Grand Rapids, Mich. During World War II, Mr. Barber went to Washington, D. C., with the pulp and paper division of the War Production Board. Later, he was transferred to the Navy Department where he became chief of the container division.

(Continued on page 51)

NEWS OF CONVERTERS

Diamond Gardner Names Jones Division President

Thomas A. Jones has been promoted to president, Molded-Packaging Division by the Diamond Gardner Corp.

Mr. Jones, who was born in Chicago, graduated from Yale University with a B.S. degree in industrial adminstration. His first job after completing college was with Proctor and Gamble as an industrial engineer. He then joined W. A. Jones Foundry and Machine Co. as an apprentice machinist. After completing apprentice training he became an estimator and was successively promoted to salesman, supervisor of industrial relations, sales manager, executive vice president and president. After the W. A. Jones Co. was sold to Hewitt-Robins he continued as general manager of the Jones Division.

In 1957, Mr. Jones was appointed vice president and general manager of the Manchester Machine Co., a Diamond Gardner subsidiary, manufacturer of papermaking machinery.

Morrill Retires at Bemis

P. E. Morrill, vice president of Bemis Bro. Bag Co., has retired after 45 years of service with the company. Mr. Morrill, formerly with the company's general offices in St. Louis, has been in the Bemis headquarters offices in Boston for the past 12 years. He will continue as a director of the company.

Swan to Manage Scott Procurement Division

Appointment of H. L. Swan as manager, Packaging Procurement Division, has been announced by Scott Paper Co.'s director of procurement R. H. Sears. In this capacity Mr. Swan will direct all procurement relative to the company's packaging requirements. He will be assisted by William M. Favre and David Van Ness as purchasing agents.

Mr. Swan joined Scott in 1947 as a production trainee, and began his association with the procurement division in 1949. He most recently has served as staff purchasing agent.

Mr. Favre has been with Scott since 1950, assuming his current position of staff purchasing agent in 1956. Mr. Van Ness is assuming his first purchasing duties in his new post, most recently serving as an industrial engineer in Scott's Chester plant.

I.B.C.A. Elects Officers At Las Vegas Meeting

Alvin A. Abramson, chairman of the board, Central States Paper and Bag Co., St. Louis, Mo., was re-elected president of the Industrial Bag and Cover Ass'n., at the group's 9th Annual Meeting at the Riviera Hotel, Las Vegas, Nev.

Also re-elected as officers of the Association were: A. L. Park, Bemis Bro. Bag Co., as vice-president; and Philip O. Deitsch as administrative officer.

In addition to the officers, Harry M. Hanson, Kennedy Car Liner and Bag Co., Marvin Chaiken, Cromwell Paper Co., and Donald V. Long, Southland Paper Converting Division, Fortifiber Corp., were elected to board of directors.

Fome-Cor Chooses Bonham As Technical Director

Frank S. Bonham of Cincinnati, Ohio, has been appointed technical director of the Fome-Cor Corp. Mr. Bonham will be in charge of all research, production and engineering activities of the company. The Fome-Cor Corp. was formed in February of this year by St. Regis Paper Co. and Monsanto Chemical Co. to manufacture and market Fome-Cor, a new lightweight panel consisting of a foamed plastic core and kraft paper skins.

Mr. Bonham, who has been on leave of absence from his former position as manager of Monsanto's plant at Addyston, Ohio, will be located temporarily at Fome-Cor's Addyston plant, which was completed last month. Fome-Cor also operates a plant at Mt. Wolf, Pa.

Container Corp. Transfers Bradley to N. Y. Office

The appointment of Earl L. Bradley as assistant sales manager of Container Corp. of America's New York national accounts office for folding cartons has been announced.

Mr. Bradley joined Container Corp. in 1934 at its Wabash, Ind., mill and, two years later, was transferred to the company's Lake Shore carton plant in Chicago. After serving as assistant office manager and office manager at the Chicago board and carton plants, he became a member of the boxboard sales department in 1942. In 1947 he was transferred to the folding carton division as packaging engineer for the Lake Shore and 35th Street plants and in 1951 was transferred to Cleveland as assistant sales manager. In 1952, he was named sales manager of the Cleveland Folding Carton Division, a post he held until his appointment to the New York national accounts office.

William E. Mastbaum will succeed Mr. Bradley as sales manager at the Cleveland plant.

Moving into Mr. Mastbaum's former post as plant manager is Wilson A. Landis, III, who, since 1957, has been assistant plant manager at the company's Valley Forge, Pa., folding carton plant.

Paper Firm Veteran Heads New Unit

Appointment of Paul F. Dickmeyer as general manager of the newly formed Fort Wayne Corrugated Paper Co. Division of the St. Joe Paper Co. was announced.

St. Joe Paper recently acquired three of Fort Wayne Corrugated's four plants. The plants are at Hartford City, Ind., Pittsburgh, Pa., and Rochester, N. Y.

Mr. Dickmeyer was vice president and treasurer of Fort Wayne Corrugated at the time the 51-year-old Fort Wayne company was merged with Continental Can Co. Continental Can immediately sold the three plants to St. Joe Paper, retaining the Chicago plant of Fort Wayne Corrugated.

Hanlon Now Gen. Mgr. Sefton St. Louis Plant

Appointment of Donald Hanlon as general manager of the Sefton Fibre Can Co.'s St. Louis plant, has been announced by C. B. Graves, vice president of Sefton, a division of Container Corp. of America.

Measuring Paper Machine Capability

Recently, the author showed us how to pinpoint coating variation by the Analysis of Variance. Here, the same technique is applied to determine the abilities of a paper machine, using basis weight as an example.

Fred Streit,
Manager of Specialty Papers Div.,
Hudson Pulp and Paper Corp.,
New York, N. Y.

When does a heavy basis weight get too heavy, or when does a light basis weight get too light? At what point should the machine tender put on a few more turns of the gate or when should he leave it alone? Simply, then, at what point during the variation of basis weight should the machine tender attempt to control the basis weight?

Over the course of his training years, a machine tender gradually assimilates the knowledge of his machine's capability. Haven't we all heard what happens when a machine tender moves over and has to run another paper machine? It takes a while to get the "hang" of the machine and to learn where and when to adjust the basis weight, among other properties. The problem over the years has been how can we define the capability of the paper machine and reduce it to numerical terms from which we can work towards uniformity.

Measuring Capability

Let us assume for the moment that a technique can be developed by which we can measure mathematically, the capability of the paper machine as regards holding specifications. We know for example, that the industry-wide basis weight tolerance is plus or minus 5 per cent of the target basis weight. We also know that when a machine is in good control, we actually can tend to run our average on the high side of the target and still manage to keep all of our paper within specifications. It is also possible to run into the other problem where there is so much variation that even if we are precisely on target, much of our paper still is outside of the specifications. Through a statistical quality control technique called the control chart, we properly maintain the levels at which we must control and then the levels at which we must reject. It can be safely stated that if adjustments are made at the point where the control limits indicate, that there is no longer cause to worry about exceeding rejection limits. The problem then becomes how do we determine the capability, and as a direct result, the control limits for the control chart.

In normal production, we would note that on a short term basis, we vary only slightly. However, as we run into a time to time or a longer term variation, we note that our average shifts up and down. Even as the average shifts, we also find a slight irregular variation about this average. Attempts must be made to control the short-term variation and also to keep the overall average within control limits, thereby preventing us from exceeding our rejection specifications. At Hudson, we have found that the control limit techniques discussed here can be of great and significant help to the papermakers. We know how to hold basis weight right on target with an absolute minimum of variation. We find that rarely if ever when we are on target do we exceed our rejection specifications. We have also noted an overall drop in the amount of total variation experienced. The control chart approach has been installed on all paper machines within our company. It gives us a graphic picture at all times of our weight variation and our level throughout the entire day.

A machine tender coming on tour can readily look back and see how the weight has been running during the previous shift. We now have mathematically defined levels at which we can adjust, rather than leave this decision to the discretion of different machine tenders. Individual machine tenders have had in the past their own individual machine tolerances. As we can reduce our variations, so can we reduce our cost. We are now dealing with a more controllable process enabling us to sense changes more readily, whether these changes are intentional or unintentional.

Uncontrollable Variation

Actually, there has been developed a mathematical technique to measure this capability. Let us define machine capability as the uncontrollable variation that is present in the process. As mentioned above there is an accepted tolerance on basis weight of plus or minus 5 per cent. If we wait until we cross beyond the 5 per cent point before adjusting the basis weight, it is possible that we may have to reject a great deal of paper. This variation which is theoretically uncontrollable, includes variation from many possible sources. To enumerate just a few:

Establishing Basis Policy

1. Headbox flow surges.
2. Variation in cutting of basis weight samples.
3. Variation in weighing the basis weight samples. (Incorrect reading of the scale, etc.).
4. Inadequacies on the part of the basis weight scale itself.
5. Humidity variations in the room.
6. Air currents near the basis weight scale.
7. Freeness changes, etc.

It is desirable to measure this variation in its entirety, finding some method to eliminate the controllable variation from the total present. Within reason, we can eliminate cross-machine variation by adjustment of the slice and machine direction variation by gate adjustments. To eliminate as much machine direction variation from this analysis as is possible experimentally, we take only 25 feet of paper in machine direction, the full width of the paper machine. Assuming the machine runs at 1500 feet per minute, it appears that the paper being used in this analysis has taken one second to make. This sheet of paper is then divided into 12 basis weight sections which are weighed and recorded as shown in Table I.

TABLE 1

Basis Weight Samples Taken Full Width of Paper Machine and 25 Feet in Machine Direction

In-Machine Direction	Cross-Machine Direction		
	Front	Middle	Back
1	31.8	31.4	31.8
2	32.0	31.0	31.5
3	32.0	31.5	31.4
4	32.1	31.4	31.8

Analysis of Variance

Prior to calculation it is fairly apparent that considerable variation is present in only one second of manufacturing time. However, the question remains as to how much of this variation is in the machine direction, in cross-machine direction or is unassignable and uncontrollable. By use of the Analysis of Variance, the calculation of which is shown in Table II it can be determined that the average basis weight is 31.64 lbs. and the lbs. per ream variation encountered would be plus or minus 1.77 per cent of this average. In further checking other machines in our company, we have found that our machine capability in some cases goes as low as 1.4 per cent and as high as 4.3 per cent. This then gives us a basic comparative level from which to work. We can now make changes in our equipment and in our process to determine what we can do to reduce this percentage of unattributable variation. However, since we found that most of the machines in our company give us a basic variation of approximately plus or minus 2 per cent, we can establish control limits on grades of paper made on these machines at this 2 per cent level. We are now advising the machine tenders that the knowledge they have acquired over the years is in reality the plus or minus 2 per cent control. This helps alleviate the conditions of over and under adjustments.

Other Uses

For those people more thoroughly versed in the field of statistics and quality control, this technique can almost be compared to the use of acceptance control charts used in other industries. In these other industries, they attempt to measure the individual short term variation present in their product. They have the decided advantage to determine machine capability by selecting just a few samples at random from production and measure the variation present within those few samples.

It is to be cautioned that the statistical techniques involved here can only be applied and used by trained statistical personnel. The same analysis shown here for basis weight may be repeated for all other numerically measureable physical properties and the capabilities determined. Such techniques as this can provide us with the best methods for control giving us a better product, more uniformly produced and at a lower cost.

TABLE II

ANALYSIS OF VARIANCE

Sample Calculation to Show How Amount of Variation from Each Cause is Determined

In-Machine Position	Row Totals	STP²=Row Totals Squared	Cross-Machine Position	Column Totals	STC²=Column Totals Squared
TP 1	95.0	9025.00	TF	127.9	16358.41
TP 2	94.5	8930.25	TM	125.3	15700.09
TP 3	94.9	9006.01	TB	126.5	16002.25
TP 4	95.3	9082.09			
4	379.7	36043.35	3	379.7	48060.75

Number of Observations = N = 12

Average = $\bar{X} = \frac{379.7}{12} = 31.64$

Overall Total Squared = $(379.7)^2 = T^2 = 144{,}172.09$

Total of Each Observation Squared = $\Sigma X^2 = 12{,}015.51$

Variation Due to:	Degrees of Freedom	Sum of Squares	Mean Square Deviation[1]
In-Machine Direction	(No. Rows − 1) = 3	$\frac{STP^2}{\text{No. Columns}} - \frac{T^2}{N} = 0.11$	0.0367**
Cross-Machine Direction	(No. Columns − 1) = 2	$\frac{STC^2}{\text{No. Rows}} - \frac{T^2}{N} = 0.85$	0.4250**
Residuals (unattributable)	(R − 1) (C − 1) = (3) (2) = 6	Diff. of sub-total of above = 0.21 from Grand Total	0.0350
Grand Total	N − 1 = 11	$\Sigma X^2 - \frac{T^2}{N} = 1.17$	

[1]Mean Square Deviation = Sum of Squares ÷ Degrees of Freedom.

Standard Deviation of Residuals:

$\sigma_v = \sqrt{.0350} = 0.187$

Per Cent Variation:

$\frac{3\,(\sigma_v)}{\bar{X}} \times 100 = \frac{3\,(0.187)}{31.64} \times 100 = 1.77\%$

**It is interesting to note that the CMD positions indicate a significant difference whereas the MD basis weights made in one second show insignificance.

manufacturing process and mainte-

to remove and sort by vendor all

ble to denote these items maintained

Establishing Basic Policy For Storeroom Control

The author explains the purpose of the stores department, the various types of stores, and how effective control is maintained over their purchasing, charging, dispersing, and deletion.

Bert Carson,
Maintenance Planner,
Hudson Pulp and Paper Corp.,
Palatka, Fla.

Most paper mills are at an extreme disadvantage insofar as maintaining small quantities of parts and supplies in inventory. This is due primarily to: (1) the mill's location in respect to suppliers; (2) the time required for vendors to manufacture vital equipment parts; and (3) the high cost involved due to delays in the manufacturing process if replacement parts are not immediately available.

Purpose of Mill Stores

After an item has been purchased and a delivery date established, the purpose of the storeroom is to: (1) receive, (2) store, (3) disperse, (4) record, (5) charge, and, in the case of stored stock items, (6) reorder. These functions must be carried out efficiently if a mill is to remain competitive with its product in a growing economical market.

To establish effective policy and procedure in respect to the control of each function of the storeroom, one must bear in mind that each purpose must be related to three types of stock maintained, these being: (1) capital asset stores; (2) special purchases; and (3) stored stock items.

Capital Asset Stores

Capital asset stores do not consist of new equipment only. In fact, items stored in this category consist mainly of spare equipment, i.e., motors, pumps, speed reducers, and machine parts which carry an initial cost high enough that they must be depreciated over a period of years. These items are labeled with an individual equipment code and number that they might be readily located and identified. They should be received and dispersed on a special type requisition which should carry the approval of both the maintenance control and the capital asset control departments. This is necessary that:

1. The capital asset ledger might be kept up to date, and
2. Maintenance charges and equipment movement be properly recorded.

Capital asset stores should be kept in a separate location. Used items should never be received in capital asset stores unless they are in first class operating condition. When a unit of equipment has served its usefulness, or has reached the state of being past economical repairs, it should be scrapped, and both the plant controller and the maintenance controller notified, that all records might reflect the dispensation. The storage area for capital asset stores should be roomy, well lighted, and equipped with hoists, dollies, etc., for ease of handling the equipment.

Special Purchases

When an item is requisitioned for special purchase, the requisitioner should note on his request what action is to be taken by the storeroom upon its arrival. If the item is machinery or equipment, it is obvious that handling costs will be expensive, therefore it is desirable to deliver such shipments to the job site that unnecessary handling will be eliminated.

In the event it is necessary to store special purchased items, records should be established for the policing of these items. These records should state:

1. Type equipment or supply,
2. Date received,
3. Name of requisitioner,
4. Stores location, and
5. Approximate date of withdrawal.

Once the stores department receives an item, its costs are charged as stores inventory. Consequently, loose control of special purchases will cause an unfavorable variance in the stores account.

Records on all special purchases should be reviewed at least once each 30 days. If these purchases remain longer than the stores supervisor deems necessary, or past the anticipated withdrawal date, the requisitioner should be contacted for an explanation or action. The stores supervisor should cause a list to be published of all items remaining in this account over 30 days. This list should state all available information and any reason for the item remaining in his stock. This list should be mailed to all management personnel. If the purchase was made for a specific job, the maintenance scheduler should be contacted for the reason for the delay in scheduling and the approximate date the work will be done. If the nature of the job is changed and the item is no longer applicable, the requisitioner should contact the stores supervisor and the purchasing department and proper procedure instituted for the return of the item. If these purchases are retained in stores stock over a period of time, they not only load the stores inventory, but also become obsolete, and the only recourse available is to sell the item for scrap.

Stored Stock

Stored stock items are those items which are used regularly in both the

manufacturing process and maintenance upkeep of a mill. The policing of stored stock requires a routine but rigid procedure, and necessitates the keeping of accurate records if the system is to function effectively. The system for maintaining stored stock not only includes receiving, storing, disbursing, etc., but entails purchasing in the form of reordering these items when minimum quantities are reached. To carry out these functions, certain forms are necessary: ie., (1) the stored stock card, (2) the traveling purchase requisition, (3) the request for addition to stores stock, and (4) the request to delete from stores stock.

THE STORED STOCK CARD

The stored stock card is the governing factor for the purchase or reorder of all stock items. This card should depict—

1. A complete description of the item,
2. The name of the equipment, or group of equipment for which it has been stocked,
3. The name of any substitute item being carried in stock,
4. Minimum and maximum quantities to stock,
5. The name and address of all vendors in the area who normally stock the item,
6. Its physical location in the storeroom.

This card not only serves as a flag when reorder is necessary, but may also be used as a source document for maintaining a perpetual inventory.

TRAVELLING PURCHASE REQUISITION

The travelling purchase requisition is the companion card to the stored stock card, and should carry the same information, plus space for—

1. Date of purchases,
2. Vendors code number,
3. Unit price, and
4. Receipt and withdrawal experiences.

Once the stored stock card denotes the item has reached its minimum, the travelling purchase requisition serves as a purchase request. Once the original purchase has been effected by the purchasing department and the vendor from whom the purchase is to be made established, to route these purchases through the purchasing department only serves to delay the reorder and adds an unnecessary burden to that department. When the stores records clerk posts to the stock cards from supplies requisitions, she should be instructed to remove and sort by vendor all cards which have reached their minimum.

The stores records typist should prepare purchase orders at the end of each day for each vendor affected. These purchase orders should then go to the purchasing department for procurement. The date of reorder should be noted on the traveling purchase requisition and the requisition returned to the files. Once the items are received, the amount should be added to any amount remaining in stock and this posted to the stored stock card.

REQUEST FOR ADDITIONAL STORES

The method by which some mills add to stored stock inventory is so loose that to maintain control is difficult, if not impossible. I have, and I am sure you too, have seen maintenance mechanics or machine tenders actually place an item in stored stock by simply stating to an hourly paid stores clerk, "stock this item." This has been done without the knowledge of the operating superintendent, plant engineer, or the storeroom supervisor. If stored stock inventory is to be minimized and kept active, tight controls must be established and adhered to. Formal request should be made in writing and approved by every member of management affected. This request should state:

1. A complete description of the item,
2. The minimum and maximum quantity desired,
3. The equipment or group of equipment for which the request is made,
4. The reason for the request, and
5. The unit cost.

This form should originate with a member of management who is directly responsible for the operation or maintenance of the equipment in question. The storeroom supervisor should sign the form first, denoting the item is not presently being stocked. The superintendents of the departments affected should also sign denoting their approval. Copies should be maintained by the storeroom supervisor as his authority to stock the item, and by the superintendent of the department responsible to denote these items maintained in stores stock for the convenience of operating his department. A company will do well to establish a reasonable dollar limit for each department on stored stock items which are to be maintained. The stores supervisor should cause to be kept, up-to-date records of the value of approved items in stored stock inventory by departments. Each superintendent should be notified at least once each quarter of the actual value of this inventory, as opposed to the allotment for his department. Once a department approaches this limit, a careful review of each item should be made, taking into consideration:

1. The experience of withdrawals for the past twelve months, month by month;
2. The normal delay from the time the purchase order is issued until the supply is received;
3. The nearness of the closest supplier;
4. The effect to production if the item is not immediately available; and
5. The cost of stocking the item as opposed to the amount of production loss involved.

If special purchases are retained in stores stock over a period of time, the only recourse available is to sell the items for scrap.

REQUEST TO DELETE FROM STORES

This form, like the request for addition to stored stock, is necessary to the control of stored stock inventory. It is necessary when:

1. The movement of the item through the storeroom will no longer substantiate its necessity as a stored stock item;
2. The equipment for which it was stocked has been altered to the extent it is no longer useful; and
3. The equipment for which it was stocked has been replaced or sold.

All too often failure to review the movement of items carried in stored stock results in the stores inventory being loaded with antiquated items.

When to Delete Stores

When the travelling purchase requisition reflects slow movement between reorders, the stores supervisor should be instructed to send the card to the department superintendent for review. The superintendent should take into consideration the recent

movement of the item with the following questions in mind:

1. Is the item still needed, if so
2. Is it advisable that the minimum and maximum quantities be reduced,
3. Is it possible to use a substitute item which is presently in stock and more in demand?

The superintendent should note his decision on an inter-office form and forward a copy of the form, along with the travelling purchase requisition to the stores supervisor.

The method by which some mills add to their stored stock is so loose that to maintain effective control is difficult, if not impossible.

Should he decide to remove the item from stored stock, he should:

1. Initiate the request to delete from stored stock,
2. State the reason,
3. Note the dispensation for any stock presently on hand, and
4. Send the completed request through the prescribed channels.

When a unit of equipment has been altered or removed, the engineer or maintenance supervisor should review the stored stock records on that equipment and institute a request for deletion on any item no longer needed for the maintenance of the equipment. When the sale of a unit of equipment is being negotiated, the purchasing department should cause a search of the stored stock records for that equipment:

1. Take a physical inventory of the parts on hand,
2. Calculate their value.
3. Advise the purchaser of same, and
4. Include the price of these parts in the sale price.

If the sale is consummated, the necessary forms should be instituted and approved. All parts affected should be crated and accompany the equipment.

Relation to Maintenance

Since the average paper mill storeroom deals primarily with maintenance parts and supplies, this paper could not be considered adequate without mention of this relationship.

The stores and maintenance departments have definite responsibilities to one another. The manner in which these responsibilities are carried out have a decided effect on the overall production and economy of the mill. It is the responsibility of the stores department to:

1. Maintain the minimum supply of maintenance stored stock items as authorized,
2. Maintain a list of all interchangeable parts,
3. Store these parts and supplies in a convenient location and in an orderly manner,
4. Maintain an efficient records system,
5. Expedite withdrawals and returns to stores, requisitions,
6. Maintain efficient window service,
7. Notify the maintenance control department of arrivals or delays in arrivals of special purchased items.

The maintenance department is responsible to the stores department to efficiently carry out the following:

1. Establish reasonable minimum and maximum quantities on maintenance stock items,
2. Make as few withdrawals as possible for each job order,
3. Cross reference all special purchase requisitions with job order numbers,
4. Schedule job orders where special purchases are involved as soon as possible after being notified of receipt of material,
5. Fill in all maintenance stores and return to stores, requisitions properly and clearly,
6. Notify the storeroom supervisor of any anticipated abnormal withdrawals as far in advance as possible.

Procedures and instructions should be written and approved for each function of the maintenance and storeroom relationship. These instructions should specify in detail the methods for carrying on this relationship for the benefit of the overall operation. Most of these procedures require the use of forms. These should be designed in keeping with other control forms to eliminate confusion and maintain the continuity of the mill's overall policy.

"Having trouble with Jonsey again?"

Illustration courtesy of Firmenich Incorporated, makers of quality flavors.

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Are You Doing A Patchwork Quilt Material Handling Job?

Is your program bringing you the results you must have in today's competitive market? Check your standing against this program.

Donald S. Adams,
Materials Handling Supervisor,
Champion Paper & Fibre Co.,
Hamilton, Ohio

What Kind of a Program?

Is your material handling program a "patchwork quilt" of hit and run checks against handling costs or are you really forging ahead, planning handling from raw materials purchase to customer's dock? Too many paper companies still leave the solution of handling problems to either an operating supervisor or to an industrial engineer on an assignment basis. This type of program will never realize the potential savings possible under an organized handling department responsible for:

1. Handling methods and operations
2. Equipment selection.
3. Equipment maintenance.
4. Equipment utilization.

If responsibility for your handling methods rests with the operating supervisor, you are not doing an adequate job for one or more of the following reasons:

Most supervisors are not qualified by training or experience to do method studies and carry them to completion.

Most supervisors are not fully enough versed in the application of the multiplicity of materials handling equipment available.

Most supervisors do not have a broad enough view of the complete plant picture to develop a program which correlates handling throughout the company.

Usually supervisors cannot spare enough time from daily operating problems to develop new methods.

Sometimes supervisors are too tied to present methods to be able to visualize the application of new equipment to their operations or the adaptability of different methods.

Full Time Engineer Needed

If an industrial engineering department man is assigned problems on a project basis, several of the difficulties outlined above are eliminated. However, unless a full-time engineer is assigned to the problem, total results should not be anticipated. The usual difficulties with the assignment approach follow:

1. Still no unified control of costs on a plant wide or continuing basis.
2. Crash programs on other problems require the time of the engineer and a hit or miss handling program results.
3. The engineer, unless he is full time, probably can not devote enough time to checking developments in new equipment to be fully versed in its application.

The organization chart (Figure 1) shows a good, sound approach to organizing for materials handling control. Most of the functions are self-explanatory. The equipment foreman might require some discussion, since most paper mills at the present time do not have their program developed to this stage. Some of the weakest points in most "patchwork quilt" handling programs are equipment selection, maintenance and utilization. Improvement of these concepts is the function of the equipment foreman. This will be discussed in detail later.

This organization can, of course, be contracted to fit the small mill by the combining of functions, but the fundamental concept of an overall organized program applies to any mill regardless of size. Only by centralizing responsibility for the cost of the functions can adequate control be obtained.

James R. Bright, director of the Industrial Management Center, Harvard University, covered this very well in a recent issue of Modern Materials Handling when he said, "In examining some 600 plants over the last eight or ten years, one interesting difference has seemed to me to mark the better manufacturing operations from the poorer ones: that is, the extent to which materials handling is regarded as an integrated, plant wide function. In plants with weak handling systems, the handling engineering is spotty, with little relationship to overall plant requirements.

How can this be avoided? Management and materials men must recognize that efficient handling is not a department to department problem. It is a vendors door to customers door problem. The best handling systems are those that recognize this full cycle."

Now Is the Time

Nineteen fifty-nine is the year to implement this program in your company, to invest the capital necessary to develop a mature well-planned program. First of all, you cannot afford to let any chances for cost reduction slip away in today's competitive market. Secondly, with today's paper production capacity greater than the market can absorb, you can afford to

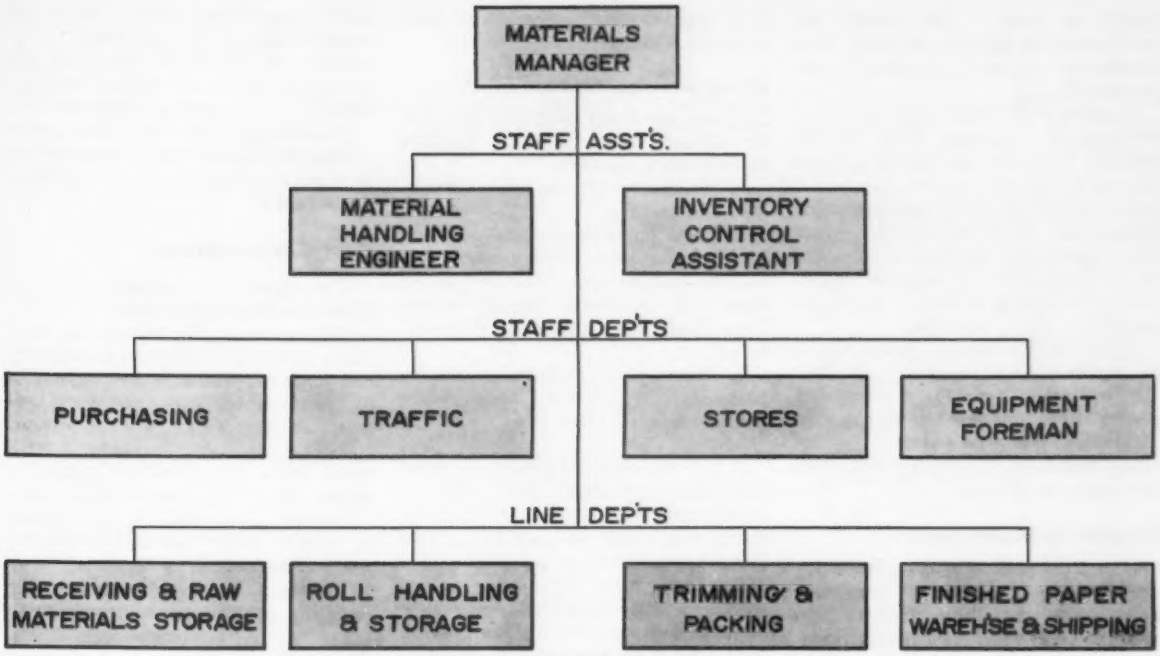

FIGURE 1—ORGANIZATION CHART FOR MATERIALS HANDLING CONTROL

let expansion plans mature on the drafting boards. This frees investment capital to take advantage of the programs you couldn't afford during the postwar period when expansion was a must to maintain position in expanding markets.

Objectives of a Good Program?

It has been stated many times that a good material handling program should carry any company through three stages of development.

Stage 1. Manual handling.

Stage 2. Mechanical handling or batch handling.

Stage 3. Automatic or continuous handling.

Companies that have very many operations that are still in stage one had better grab themselves by the bootstraps and start lifting. Most companies are fairly well advanced in stage two and have some operations at stage three.

How near to stage three is your operation? Where should the next step be taken? How efficient are the operations now mechanized?

Hidden Costs

Most companies have gone into stage two (mechanized handling) very extensively since World War II. Although some of their operations may now have reached stage three, they probably are not taking full advantage of the economies of stage two. There are usually several reasons why maximum savings are not being realized. Among these are the following:

1. Methods were not studied in sufficient detail to show the effect of the method on the total operation.

2. Equipment purchased not selected for maximum saving, or change in operation or equipment design has made it obsolete.

3. Equipment not being maintained and replaced under a program to minimize total cost. (All the factors in equipment replacement decisions must be taken into account. i.e. maintenance cost of present equipment, replacement cost, cost to operations of equipment downtime, and effect of equipment obsolescence on handling costs.) Some program such as the MAPI replacement policy should be employed to include all these factors.

4. Pallet costs not being controlled by (a) maintenance program, (b) studies as to correct type to be used (disposable, warehouse, etc.), (c) study of whether to buy or make.

5. Equipment is not being utilized to the maximum, usually because of assignment to a specific department and often even a specific job. This results in equipment utilization in the range of 35-40 per cent instead of the 60-65 per cent possible with flexibility of assignment under centralized control.

Therefore, if you are a typical paper company in the U.S. today your program should be aimed at two things; first, the most economical operation of equipment and methods already adopted, and second, investigation of what additional moves toward stage two or stage three of material handling development offer the best possible payout advantage for your operation.

Equipment Costs

The more operations you have in stage two of development the greater the need for the equipment foreman mentioned in the organization chart.

The equipment foreman, as stated previously, should be responsible for equipment selection, maintenance and utilization. Companies in the paper industry, as in other industry, have mechanized their handling operations on the basis of manpower reduction studies. These studies used certain cost figures arriving at the return on a proposed investment. These figures were sound, and if equipment had been maintained and replaced on a logical basis, the justifications would be valid. However, if engineers were assigned today to restudy these operations and compare present operating costs with costs under the old manual methods, I venture to say that in 35 per cent of the studies the manual method would be cheaper. The failure has come because equipment maintenance is an operating cost and the gradual growth of equipment maintenance costs has been ac-

cepted as part of the penalty of mechanization without relating it to whether or not handling methods are paying off.

In most mills when you ask a supervisor or engineer what is the cost/ton to handle any of the various materials, he will usually give you a figure usually in either man hours or dollars/ton which represents direct labor costs only. It does not indicate in any way that owning, operating, and maintaining a fleet of handling equipment costs anything.

Even in the many cases where mechanized handling costs (including equipment costs) represent a saving over manual methods, the maximum potential saving is not being realized unless equipment costs are being controlled.

Preventive Maintenance

Handling equipment preventive maintenance is extremely important to a sound handling program. In order to have a good preventive maintenance program, it is necessary to have enough equipment so that a regularly scheduled inspection can be made without penalizing the operating foreman by the withdrawal of his equipment from service. However, a good preventive maintenance program will result in reduction of the number of pieces of equipment "deadline" so that the total investment in equipment should be no greater.

The equipment foreman should either set up or be provided with a good maintenance cost record system. This record is absolutely essential to any well-run program. It is of primary importance as a factor in equipment replacement studies, and it gives the foreman his only way of telling how efficiently he is operating. The performance of the foreman is judged by these costs and by equipment availability.

A study of detailed maintenance costs by the equipment foreman will often turn up interesting leads about particular pieces of equipment which are costing too much to maintain. He is then in a position to investigate and determine the reason for this cost. It may be that the piece of equipment is too light for the job; driver training may be necessary to develop correct techniques of operation; some part of the equipment may be poorly designed (this can be pointed out to the supplier for corrective action); plant conditions may be a contributing factor (floor condition, dust, poor lighting, etc); or maybe the truck is just beyond its useful economic life. Only by having adequate cost records can the foreman spot these problems and take corrective action.

Many Savings Possible

There are many ways savings can be effected under a well-organized maintenance program.

1. Mechanics can be better organized and trained.

2. Parts purchasing economies can be effected. Often after study, parts can be bought more cheaply direct from the automotive supply houses than from the equipment distributors.

3. Maintenance schedules can be planned to fit in with hours when equipment utilization is at its lowest ebb.

4. The foreman can determine what tools and equipment are necessary to efficient operation of the maintenance shop and can see that these items are properly cared for.

The equipment foreman with his cost records and knowledge of equipment is best qualified in conjunction with operating foremen and purchasing department representatives to direct the selection of equipment to be purchased.

Equipment Utilization

The equipment foreman should also be responsible for truck utilization studies and assignment. By making studies of equipment utilization the equipment foreman can determine how efficiently the investment in handling equipment is being used. Many times by using the equipment in more than one department and by increasing the number of shifts worked per day the foreman can accomplish more with the same investment. Radio control of equipment is being used extensively to increase the utilization factor. Workers more and more expect the back-breaking material handling jobs to be done by mechanical equipment, but on some small volume operations the investment can not be justified. However, if equipment time can be made available from some other operation to do these low volume handling jobs, then plant safety and efficiency both have been increased.

Development Check List

Stage two of paper mill handling represents a mechanized batch process whereas the ultimate development to reduce handling costs must be an automatic continuous process.

Many of the concepts of the mills of the future are being developed in the paper industry and other industries today. As new mills are built, older mills must modernize or lose their competitive position. As in all industry the trend is to greater production per man hour. The need for better educated and trained workers becomes more and more apparent.

The detailed table is an attempt to outline the handling methods used in each of the three stages of handling development.

Cost Considerations

The speed with which industry moves to stage three depends necessarily on costs. We all realize that. To be practical, no change in methods can be made which is not economically justifiable. This, however, presupposes that we know what present handling costs are. In common with many other industries the paper industry does not always know this.

Present costs can be determined by special study, but this is not the most satisfactory or economic way to get them. To give direction to the handling program it is necessary to know where the trouble spots are. And cost information is needed on a current basis.

The only way to control costs is to know them currently and know them on a basis that can be compared with your own costs past and future, with other companies in the paper industry, and with other industries. To minimize variables such as wage rates and volume these costs should be stated in man hours per ton handled; not in dollars per ton or man hours per skid. If costs are for warehousing or some other operation where it is difficult or impossible to establish tonnage actually handled, then figures should be based on some tonnage that will at least be an indication of tonnage handled such as "tonnage received "or tonnage shipped."

Costs must include one or all of three factors, depending on which apply to a particular operation:

A Full time handling labor.
B Part time handling labor.
C Handling equipment costs.

Full-time handling labor includes all help devoting full time to handling operations such as truck or crane operators, stock clerks, car loaders, unloaders, etc. This type of help is easily catalogued and costs established.

Part time handling labor is the difficult item to tie down. This is the handling performed by people who are really production personnel but who represent the hidden handling costs that can quickly justify expenditures for stage three equipment if they can be tallied.

Wood Handling

Stage 1	Stage 2	Stage 3
	Delivery to Mill	
Manual loading and unloading of cars or trucks.	Mechanical loading and unloading of cars or trucks using cranes, bulldozers, dumpers, etc.	From woodland operations "landing" storage to mill in chips or cordwood depending on distance to be shipped, freight rate for shipping methods, and volume moving from shipping point. Mechanically unloaded in the case of cordwood and immediately barked and chipped. Pneumatically unloaded in the case of chips. Storage of chips in either case on the ground in moderate climates and in bins or silos in northern climates.
	Reclaiming from Storage	
Manual handling of pulpwood from storage pile to transfer vehicle to wood room.	Mechanical reclaiming from storage piles with stationary or portable crane, bulldozer, etc. to conveyor or flume.	Recovery by pneumatic conveyor direct to digesters since wood is already in chip form.
	Chips to Digester	
Belt conveyor.	Belt conveyor.	Direct from chip storage as above.
	Digester	
Batch cooking	Batch cooking	Continuous cooking.

Stock Preparation Activities

PURCHASED PULP

	Receiving	
Unloaded by hand by individual bales, laps, or rolls.	Unloaded by fork truck or bale clamp truck.	Unloaded by fork truck or bale clamp truck.
	Storing	
Hand piled in storage.	Piled by fork truck or bale clamp truck.	Piled by remotely controlled crane stacking device. Area of warehouse to be used for storage selected by inventory control clerk who sets this by push button control. Truck moves to correct area and electronic sensing devices position load.
	Reclaiming	
By hand from piles. Moved to Beater Room on hand trucks and thrown into beaters by hand.	Reclaimed by fork truck and moved to Beater Room. Thrown into beaters by hand.	Reclaimed by same automatic crane as above. Moved direct to beater room on conveyors and dumped off the end of the conveyor into hydropulpers. Fed through metering system into paper machine system.

BULK CHEMICALS

	Receiving	
Unloaded by hand and moved to storage with push carts or buggies.	Unloaded with front end loaders or reciprocating winch scoop. To bins by gravity or belt conveyor.	Unloaded by gravity or pneumatic conveyor to bins or slurry tank.
	Reclaiming	
By hand with hand carts and buggies.	By front end unloaders.	Pneumatically, by gravity or by conveyors in the bottom of bins. Pumped in case of slurry.

Bagged Chemicals

	Receiving	
Unloaded by hand to hand truck.	Received in unit loads and unloaded with fork truck. Usually received on low cost disposable pallets and stored on warehouse pallets.	Increase use of bulk handling methods and/or use of larger shipping units made of corrugated, plastic, metal or rubber. Capacities from one to five tons.

Stage 1	Stage 2	Stage 3
	Storage	
Hand piled.	Piled by fork truck on pallets mentioned above.	In bulk or shipping units mentioned above. These can be stacked in most cases and in some cases can be stored outdoors using low cost yard space.
	Reclaiming	
By hand with hand trucks to beaters.	By fork truck or pallets.	Fork trucks or crane to metering system.
	Rolls From Paper Machines	
	To Shipping	
Monorail or flat bed truck to shipping. This usually required an operator and a helper to assist in picking up rolls. Hand trucked or rolled into car.	Monorail, clamp truck or fork truck to shipping. If by monorail using automatic clamp so that no helper is required to pick up roll. Loaded into car with fork or roll clamp truck.	Conveyed from paper machine through automatic weighing, marking, and wrapping equipment. Conveyed to dock and loaded into car with roll clamp truck.
	To Process	
Monorail or flat bed truck or storage as above. Recovered by operator and helper and push rolls into position or insert lifting device.	By fork truck or monorail equipped as above. Piled on end so that no assistance is required. Recovered by monorail or truck with forks or roll clamp.	Conveyed from paper machine weighing to storage. Placed in high stacked storage on end. Stacked with electronically controlled crane or roll clamp truck as for handling baled pulp. Each roll of paper will be inventory controlled by punched cards or tape created at the weigh-in station. Card will show storage location. Feeding the card or tape into sensing equipment will start the crane or truck to recover the roll and feed it to the correct conveyor for the next process.
	Sheet Handling	
	At the Cutter	
Sheeted onto skids. Moved by truck to sorting.	Sheeted onto skids. Moved by truck to sorting.	Sheeted into trimmer load units onto conveyor. Cutter sorted. If further sorting is required, load is fed to sorting conveyor.
	At Sorting	
Sorted in lifts and hand piled from skid to skid.	Sorted from skid to skid with skids kept at working level by air or hydraulic lifts.	Paper designated for further inspection is handled by sorters, a trimmer load at a time as paper moves past on conveyor. Conveyor controlled by operator. Sheets removed and added as necessary. Loads then routed back into conveyor to trimmers.
	At Trimmers	
Skid moved to trimmer and trimmer loads hand lifted to bed. Lifted off trimmer and piled by hand.	Semi-automatic unstacking device takes paper from skid and deposits on trimmer bed. Same type of device takes paper from trimmer bed and builds stack on shipping skid. Or paper is conveyed to cartoning or casing station.	Conveyor feeds paper onto trimmer back table as required.
	Packing	
Skids strapped with hand tools. Bundled paper hand tied or sealed. Carton paper hand piled in cartons and taped. Paper trucked to warehouse on skids.	Skid strapping units electric or air powered. Suspended overhead for increased availability and decreased fatigue. Cartons, bundles, and cases palletized for fork truck handling to warehouse.	Paper is automatically skidded, cartoned or sealed as dictated by customers requirements. Cartons and sealed units automatically palletized for warehousing and shipment. Skids and cartons are compressed to remove entrapped air before packaging. Conveyed to warehouse for storage.

Warehousing

Stage 1	Stage 2	Stage 3
Manual handling of individual package units.	Mechanical handling of unit loads. Usually on pallets, sometimes with various fork truck attachments.	Stored by conveyors controlled by reading and memory devices.
Usually low height storage using ¼ to ½ of the available cubic volume of warehouse.	Higher storage piles and resulting increased utilization of cube.	Order filling by electronic devices as described under roll storage.
Inventory taking tedious and difficult.	Faster and easier inventory because of larger storage units.	

Shipping

Loaded into cars or trucks with hand trucks.	Loaded with powered walkie and rider type equipment.	Conveyed to loading station. Placement in car by powered equipment.

Damage Control

Blocked in car by use of toe blocks, gating and strapping rigidly to floor or walls.	Controlling damage by breaking contents of the car into units by the use of strapping or DF bracing Within smaller damage causing voids develope. The interaction of the units is then controlled by the DF bracing or by the use of semi-floating or full floating loads. These reduce the intensity of shocks within the car.	Control of damage in route by elimination of the creation of voids within the transportation unit. The use of compressed air for bracing eliminates these voids that result in damage to contents. Normally the first impact develops the void; the second impact sets the contents in motion in the void previously created. Compressed air does not allow the original void to develop since it expands and fills the space when the contents compress.

Separate Handling & Production

No foolproof method has yet been developed for separating handling time of production workers. However, several methods are workable for arriving at fairly accurate estimates of these figures.

Operator Reporting: This is probably the least satisfactory method because of doubtful accuracy, but this can be a start in establishing total handling costs.

Job Analysis Studies: If your company has a well established job analysis program, it may be possible from study of these records to arrive at percentages of time devoted to handling operations. If not complete enough they can still serve as a basis for further investigation.

Work Sampling: This is probably the best method. It may be done on a quarterly or yearly basis to establish the percentage of handling time for various operations.

Time devoted to establishing these costs can be time well spent. It may point out any one of a number of things. First it may show that production could be improved and costs cut by assigning full time lower paid handling personnel to relieve production personnel of handling duties. Or maybe it will show that continuous processing equipment, although expensive, will pay for itself in a short time.

The third item of cost is equipment cost. These costs include depreciation, operating costs, maintenance supplies, maintenance labor and materials. Don't forget accessory equipment such as pallets, skids, etc. All mobile equipment should be provided with hour meters for adequate maintenance control. From hour meter records it should be possible to establish a dollar per hour of operation cost. In order to add this to our other man hour per ton handling costs it is necessary to establish a per cent ratio of equipment operating costs to labor dollar costs. This can be done as shown in the formula below:

$$\frac{\text{Equip. cost/hr.} \times \text{hrs of operation/ton handled}}{\text{average dollars/man hour}}$$

The hours of operation per ton handled can easily be established for any operation by combination of hour meter readings and daily production reports. Average dollars per man hour is merely the average wage per man hour for material handling labor.

Adding this to the full and part time handling labor costs previously established you should have an accurate cost per ton of material handled for any operation. Having determined the present handling cost you are ready to compare this with proposed method costs. These methods may be ones used in other mills, other industries, or new methods developed by your own personnel. Costs for these new methods can be obtained from other similar operations or by the application of predetermined standard times. Knowing these costs you can determine the production or handling volume at which you can afford to move from stage one to stage two or stage three.

Knowing the costs of mechanized handling you can work to reduce these costs so that it becomes economically practical to upgrade from stage one to stage two low volume handling jobs that were not perviously warranted. By increasing the per cent of equipment utilization you will increase the number of jobs you can do with existing equipment without increasing equipment investment or operator costs.

The materials manager with an opportunity to coordinate purchasing, handling, and shipping costs can do more to reduce paper making costs than anyone else in your organization. Give him an opportunity to prove it.

How Refiner Plug Repair Reduces Costs at a Mill in Peru

A process for reclaiming refiner plugs doubles their working life and effects huge savings at this W. R. Grace paper mill.

Jack Cullin,
W. R. Grace & Co.,
Paramonga, Peru

The primary aim of the maintenance and engineering workshops attached to any industrial undertaking should be the efficient, rapid and economical execution of any repairs of maintenance jobs which are entrusted to them. The workshops at Hacienda Paramonga, Peru, which deal with the vast program of maintenance and repair work involved in the running of W. R. Grace's Paramonga sugar mill, paper mill, pulp plant, alcohol distillery, caustic soda plant, etc., endeavor to fulfill this aim and are constantly seeking new methods and applications to enable them to assist in keeping the wheels of industry turning smoothly and economically. In the maintenance of paper mill refining equipment considerable savings are being effected by the application of hardfacing by the electric-arc process, as shown in the following outstanding example.

Savings in Refiner Repair

The cost of spare parts, in our case, does not stop with the actual purchase price of any given article. To the factory cost figure must be added such items as ocean and inland freight, export boxing and packing, dockside handling charges, insurance, commissions, customs duties, inventory and warehouse charges. Add to this formidable sum the additional hidden expenses caused by high inventories and stocks which may be counted as dead capital with the consequent loss of interest, the extra work involved for the purchasing department and accounting department and then consider that if adequate stocks are not carried to cover our requirements, then we are liable to production losses while awaiting deliveries from the U.S. or Europe; deliveries which may take up to four months from factory to our warehouse. In the case under review, which deals with the reclamation of paper mill refiner plugs, the cost of a new plug in our warehouse is around s/.34,000.00 (Peruvian currency) which at an average exchange rate of s/.27.00 to the U.S. dollar represents some $1260. The working life of this new plug is approximately 40 days.

A method of reclaiming these plugs has been perfected in Paramonga workshops and was put into practice some 12 months ago. This method gives us a plug with an average working life of 100 days at a total cost (including overhead) of only $300. Reducing this to a daily cost of operation of our refiner we get the following interesting results (sums in U.S. dollars):

	New Plug	Reclaimed Plug
Cost	$1260.00	$300.00
Working Life	40 days	100 days
Cost per day	$31.50	$3.00
Cost per year*	$9450.00	$900.00
Savings per year on seven refiners		$59,850

* Using average of 300 production days per year.

Hardfacing Process

The rebuilding process, which is carefully controlled and which follows a sequence calculated to offset any contractional stresses which may be set up, can be repeated any number of times on the same plug. In Paramonga, we have plugs actually working which have been reclaimed 3 times without detracting from their efficiency in any way. The shell fillers do not suffer from being in contact with the hardfaced plugs. Another advantage of the repaired plug is that whereas the original plug was completely worn out after 40 days service, the rebuilt plugs are withdrawn from service after 100 days only partly worn, which allows us to rebuild more easily, using less welding material, electric current and lower labor costs. Also we draw a plug any day it suits us; we are not tied down to worn out plugs when we really need the refiners in service. Downtime for plug changes is kept at a minimum and can be arranged to fit in with current maintenance on the machines.

Basically, the welding procedure is relatively simple if adequate precautions are taken to see that the correct sequence is strictly adhered to when depositing the weld metal. The procedure consists of two distinct steps.

A. Application of a "buffer layer" of 18/8 stainless which serves the dual purpose of preparing the surface of the worn plug to receive the hard facing metal and also, as its name implies, serves as a buffer between the harder rod and the parent metal of which the plug is made.

B. Is the application of the hardfacing rod which gives a deposit of air-hardening alloy steel which has a hardness of around 500 Brinell with unusual resistance to abrasion. The weld deposit is left ⅛-inch higher than the required dimensions to allow for finishing and subsequent grinding. This excess weld metal also

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Editors Note: This mill, known as the Sociedad Agricola Paramonga Limitada, has three paper machines with production of 70 tons per day; one is a 110-inch combination fourdrinier and cylinder with Yankee dryer; the second is an 86-inch fourdrinier with Yankee dryer; and the third is a 112-inch, five-cylinder machine. Bleached and unbleached bagasse pulp is also produced at this mill.

assures that we obtain a sharp, square edge to each spline of the plug. As a further aid to reduce possible distortion of the plug to a minimum during welding, we mount the plug on a specially designed mandrel while it is being rebuilt. This mandrel is then drawn and another one fitted for the subsequent grinding and finishing of the plug which is held to close tolerances.

For lack of a machine grinder, we use an old center lathe with the tailstock set over to a specially constructed jig which allows us to utilize the carriage feed of the lathe together with a grinding attachment mounted on the tool-post. The 12-inch diameter grinding wheels presently in use have a life of from six to eight plugs before they are rendered unservicable; however, the makers have been contacted to see if they can specify a wheel which would improve on this performance.

Economical in U.S.?

We are unaware if the pulp and paper industry in the U.S. has recourse to the repair and reclamation of refiner plugs along the lines described above. No doubt the higher extra costs involved by us in the purchase of spare parts, coupled with our lower labor costs make this method of reclamation so economical here. However, this is offset to a degree by the fact that the welding rods required for the reclamation can be purchased so much cheaper in the States. If labor charges for welding operators and lathe operators in the U.S. were considered at $3 per hour, then it is felt by the writer that the plugs could be rebuilt in the States at a cost of around $450. To this figure must be related the "hidden costs" mentioned earlier which deal with having to carry high stocks and consequent heavier inventories.

Dear Mr. Evans:

In case any of your readers are actually engaged in the reclamation of plugs . . . I would be pleased to hear from them on a purely technical basis, with a view to either improving my methods or helping them with their problems. . . .

During the next three months, my address will be 32, Montague Road, Hucknall, Notts., England. Any correspondence from your readers would best be directed there.

Sincerely,
Jack Cullin

Paramonga Workshops
W. R. Grace & Co.
Peru, S. America

PJT NEW LITERATURE

Bantam Speed Changer Kit

Tells how with this kit designers, laboratory technicians, and instructors can rapidly assemble a complete Bantam speed reducer or increaser in any one of 29 ratios. Data Sheet 95. Metron Instrument Co., 432 Lincoln St., Denver 3, Colo.

Fenwal Unit Thermistor Controller

Describes their transistorized thermistor controller, Series 535. Also includes specifications, available temperature sensing probes, and suggested applications. Bulletin MC-179. Fenwal Inc., Pleasant St., Ashland, Mass.

Goodrich Paper Mill Rolls

Contains information on the preparation of cores for re-covering, roll storage and dynamic balancing of rolls. Also includes a guide on how to order paper mill roll covers and cores. Catalog 9700. B. F. Goodrich Co., Akron, Ohio.

Noma Clerical Salary Survey for 1959

Contains salary and corollary data reported for 509,230 clerical office employees from 7,590 companies in 128 cities throughout the United States and Canada. Booklet. National Office Management Asso., 1931 Old York Rd., Willow Grove, Pa.

Log Stacker Series F

Provides photographs and information on the improved 30-ton capacity electric log stacker, Series F. Also includes illustrations of typical a.c. gear motor installations which show how electric power is directly applied. Bulletin 105A. R. G. LeTourneau, Inc., 2399 South MacArthur, Longview, Tex.

Hankison Condensifilters

Features Models M-30T and M-100T condensifilter, both incorporating an internal trap. These may also be obtained without an internal trap if desired. Bulletin 4158. Hankison Corp., College & Pike, Canonsburg, Pa.

Carte, Cartoncini E Carton

800 pp book by E. Gianni contains 200 illustrations. Publisher: Ulrico Hoepli, Milan, Italy. Price Lire 8.500. Begins with five vocabularies of technical terms of the paper industry in Italian, French, English, German and Spanish, which also cover expressions of paper technology and manufacturing plants. Gives a survey of the paper industry from origin to the present time and closes with a synthetic but expressive collection of up to date statistical figures showing the rapid development of world paper production and consumption after World War II.

Jagenberg Sheet Cutters

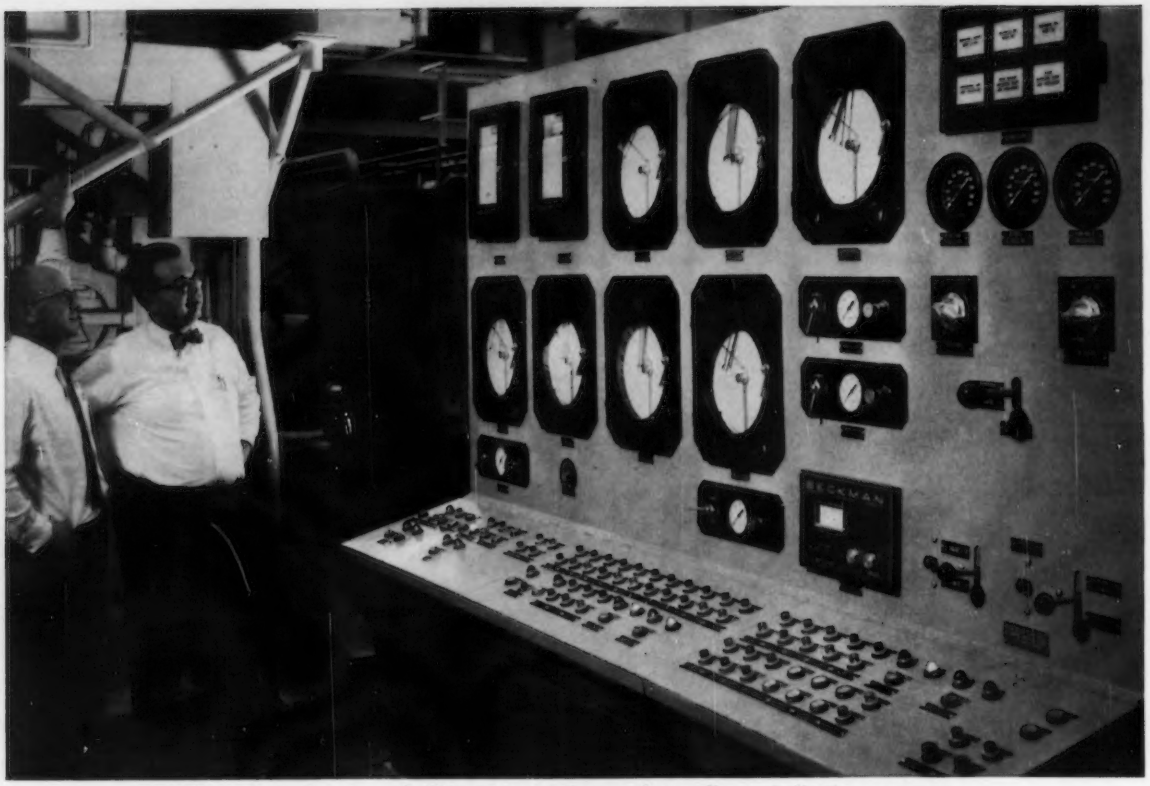
Describes the outstanding design features and characteristics of these simplex and duplex paper sheet cutters. These are also suitable for light and medium weight board cutting. Also shown are optional equipment and accessories. Bulletin. American Paper & Pulp Co., Inc., 300 Fourth Ave., New York 10, N. Y.

Glossary of Packaging Terms

Contains 323 pages of definitions and is now available at $3.00 per copy. Packaging Institute, 342 Madison Ave., New York 17, N. Y.

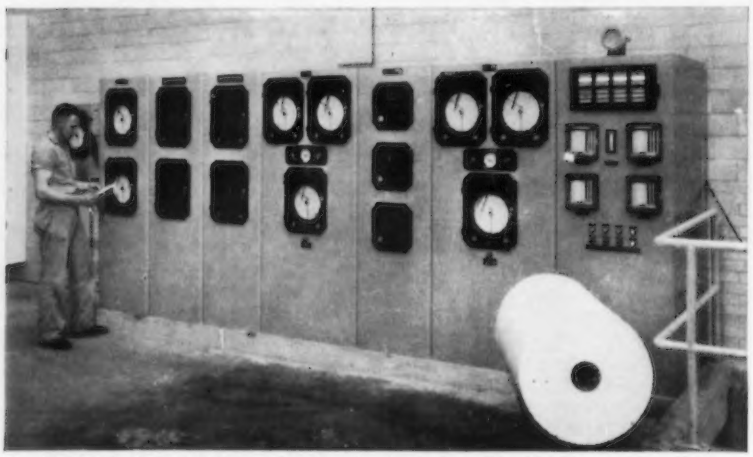
Mercury J-4 Rotogravure Press

Contains illustrated sales copy on their roll to roll rotogravure press. Bulletin. Mercury Engineering Corp., 2100 N. Farwell Ave., Milwaukee 2, Wis.

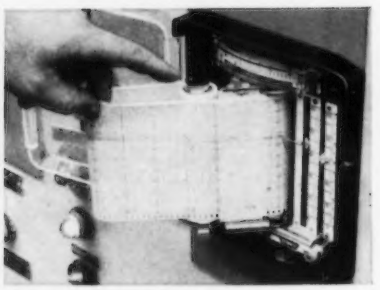


Control panel at wet end of No. 10, regulating—and recording or indicating—vacuum, pressure, pH, wire speed and level.

Whatever the Process...



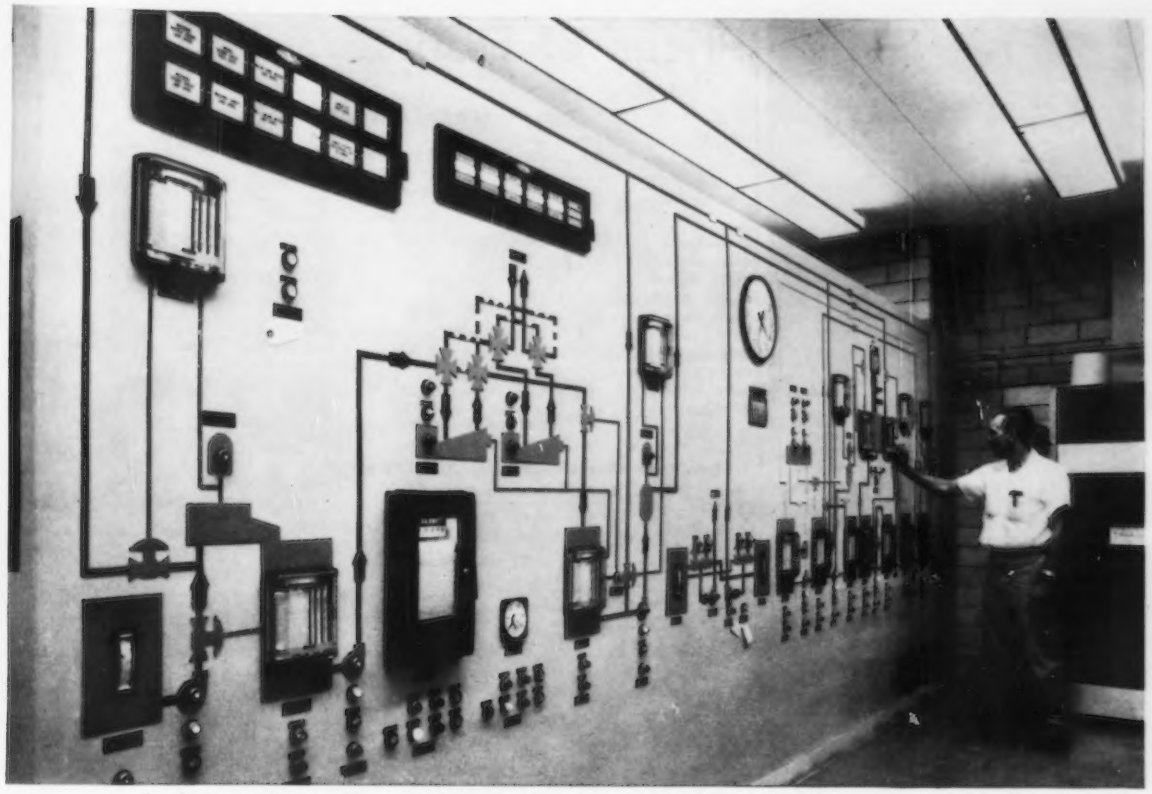
Taylor FULSCOPE* Controllers for the drainage and moisture control system supplied by Stamm Drying Controls, Inc.



Ecusta was the first paper mill to make wide usage of TRANSCOPE Recorder advantages: —the convenience of plug-in features for quick change; unconfused readability; servo-operated pens and process alarms. No other recorder puts so many features in so little panel space.

*Reg. U.S. Pat. Off.

Taylor Instruments



Stock preparation graphic control panel utilizes the many operating and maintenance advantages of the TRANSCOPE* Plug-in Recorder.

Ecusta relies on Taylor!

From baled pulp to finished paper, new No. 10 machine uses automatic controls

THE world's widest—and probably fastest—machine for lightweight paper was recently installed at Ecusta Paper Division of Olin Mathieson Chemical Corp., Pisgah Forest, N. C. The 182 inch wide No. 10 is probably the industry's closest approach yet to "Full automation".

Automatic controls monitor all stages of stock preparation, supervise the process flow and keep the specifications for the sheet constant. In the event of a break in the sheet, process flows are automatically reduced, production is cut off behind the break, and alarms are sounded.

This installation points up the virtue of close cooperation between manufacturer, consulting engineers and instrument supplier. Engineers from Ecusta, Chas. T. Main, Inc. and Taylor Instrument Companies worked as a team to produce a quality control system for No. 10 of which Ecusta is justly proud.

• • •

On your next instrumentation problem, why not sample these established sources of lasting satisfaction—Taylor's broad experience with paper mill problems, our teamwork with your technical forces and your consultants, and the finest in instruments whether pneumatic or electronic. Calling in your Taylor Field Engineer will cost you nothing—it may save you much. If you prefer, write Taylor Instrument Companies, Rochester 1, New York or Toronto, Ontario.

MEAN ACCURACY FIRST

You'll Get Longer Life, Better Performance With

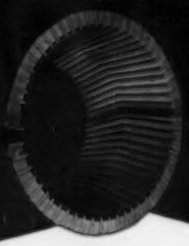
BLACK-CLAWSON X-66 JORDAN PLUGS

High strength, BlaCaloy (ductile iron) castings—precision machined. Special Mox 4 bands hold bars firmly in slots—with a full 1 inch side metal support both sides of bars—full length. Rotation of plug can be reversed for maximum jordan efficiency.

Fillings available in all materials. Full length beads on each side of bars prevent spacers from rising.

Super-Rigid

BULLDOG SHELL FILLINGS



Write for Bulletin 22

The original pre-assembled filling—for all makes of jordans.

Assembled in special jigs for rigidity and perfect symmetry. Every bar and spacer keyed with heavy bands and reinforced for maximum strength.

Shipped to You in a Strong Fibre Container

Lighter, easier and safer to handle. Fillings stay clean and dry. Facilitates storage and inventory checks.

Available only from:

THE BLACK-CLAWSON COMPANY

SHARTLE DIVISION

MIDDLETOWN, OHIO

Prices of Fibers

MARKET WOOD PULP

THIRD QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$ 82.50/ 90.00	$ 82.50/ 90.00	‡$90.00/ —	‡$80.00/ —	‡$90.00/ —
Bleached Gw'd	$ 97.50/100.00	$ 97.50/100.00			
Kraft, Blchd.	157.00/ —	160.00/162.50	‡157.00/162.50*		‡157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		‡137.00/ —		
Kraft, Semi-bleached.	140.00/ —	140.00/ —			
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	155.00/ —	155.00/ —	*155.00/ —	*155.00/ —	155.00/ —
Sulphite, Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd	135.00/ —	135.00/ —	†135.00/ —	*135.00/ —	
Sulphite, Unb'l. Gl'sn		140.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

‡ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances

COTTON LINTERS

F.O.B. OIL MILLS
WEEK ENDED JULY 7

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	$ — /6.75	7.50/7.25
3	$7.00/6.00	$7.50/7.00	6.25/5.75	7.00/6.75
4	6.00/5.25	6.25/5.75	5.50/5.00	6.50/6.25
5	5.25/4.75	5.25/4.75	4.75/4.50	5.75/5.25
6	4.75/3.50	4.50/4.25	4.00/3.75	4.25/3.75
7	3.50/2.50	4.00/3.00	3.25/2.75	3.00/2.75

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	July 13	July 13	July 13	July 13
No. 1 Mixed Paper	$ 10.00/ 12.00	12.00/ 14.00	9.00/ —	14.00/ —
No. 1 News	14.00/ 15.00	15.00/ —	18.00/ —	18.00/ —
Overissue News (Lg. size)	13.00/ 15.00	12.00/ 14.00	23.00/ —	20.00/ —
Mill Wrappers	19.00/ 22.00	13.00/ 15.00	14.00/ —	15.00/ —
Old Corrugated Containers	24.00/ 25.00	23.50/ 24.00	23.00/ —	23.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	35.00/ —	55.00/ —
New Double Kr. Ld. Corr. Cuts	35.00/ 37.50	37.50/ —	37.50/ —	35.00/ —
(Semi-chem. medium)	47.50/ 50.00	45.00/ 50.00	45.00/ —	36.00/ —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	57.50/ —	— / —
New Br. Kraft, Env. Cuts	70.00/ 75.00	70.00/ 75.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Unprintd	60.00/ 65.00	65.00/ 75.00	60.00/ —	60.00/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	25.00/ 30.00	24.00/ —	35.00/ —
White Newsblanks	60.00/ 65.00	48.50/ 55.00	45.00/ —	55.00/ —
No. 1 Soft White Shvs.	60.00/ 65.00	60.00/ 65.00	55.00/ —	70.00/ —
Super Soft White Shvs.	65.00/ 75.00	75.00/ 85.00	65.00/ —	— / —
Hd. White Shvs.	85.00/ 90.00	90.00/100.00	85.00/ —	95.00/ —
Hd. White Env. Cuts	100.00/105.00	105.00/115.00	90.00/ —	113.00/ —
Col. Tab. Cards	55.00/ 57.50	55.00/ 57.50	55.00/ —	40.00/ —
Manila Tab. Cards	77.50/ 80.00	77.50/ 80.00	75.00/ —	65.00/ 70.00
No. 1 Col. Ledger	40.00/ 45.00	37.50/ 42.50	50.00/ —	35.00/ —
White Ledger	60.00/ 62.50	60.00/ 65.00	60.00/ —	55.00/ —
Mixed Book & Mag.†	25.00/ 28.00	— / —	20.00/ —	— / —
No. 1 Books‡	30.00/ 32.50	24.00/ 26.00	40.00/ —	17.00/ 24.00

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

PAPER PEOPLE

(Continued from page 30)

P. H. Glatfelter, chairman of the board at Glatfelter Paper Co., Spring Grove, Pa., who was recently awarded an honorary doctor of law degree from Lawrence College, Appleton, Wis. during the 110th commencement exercises of the school.

Tennessee River Announces Staff Appointments

G. W. E. Nicholson, president, has announced that the Tennessee River Pulp & Paper Co., Counce, Tenn., has made the following appointments: Dan R. Pichon Jr., formerly manager of industrial relations with the Dierks Paper Co., Pine Bluff, Ark., has been made manager of industrial and public relations. Lawrence T. Coker, formerly with the Hollingsworth & Whitney Div. of Scott Paper Co., Mobile, Ala., has been appointed to the position of senior engineer.

Lafrenz to Be Paper, Pulp Sales Manager

Jon R. Lafrenz has been named sales manager of the pulp and paperboard division of Potlatch Forests, Inc., to succeed James J. Hecker, who resigned recently. L. Keith Bussert has been named to succeed Mr. Lafrenz as assistant sales manager of the division.

Mr. Lafrenz is a graduate of the University of Washington with a degree in chemistry, and did graduate work at the University of Idaho. He joined the chemistry department of PFI in 1950 and entered the sales division in 1952.

In 1956 Mr. Lafrenz was transferred to San Francisco as western sales representative of the company and returned to Lewiston in 1958 as assistant sales manager of the pulp and paperboard division.

Mr. Bussert, a 1949 graduate of Purdue University, joined the company that year and has held various positions before he joined the sales staff. From 1954 to 1958 he was paperboard sales service manager and in 1958 succeeded Mr. Lafrenz at San Francisco.

Five Recent Grads Join Crossett

The Crossett Co. has announced the employment of five new men to fill key responsibilities.

Jessee B. Galbraith has joined Crossett Paper Mills as a mechanical engineer. He is a native of Calion and a recent graduate of the University of Arkansas.

Another mechanical engineer employed at Crossett is Howard O. Reeves, a recent graduate of Louisiana Polytechnic Institute and a native of Bogalusa, La.

Charles W. Lamb has joined the Crossett research division as a chemical engineer. He is a graduate of the University of Arkansas and a native of Leola.

Franklin T. Balton and Bobby J. Neill have joined the company's Forestry Division as assistant district foresters.

Finch, Pruyn Ups Two

Henry J. Roehner, Jr., has been appointed finishing superintendent in charge of shipping and converting operations at Finch, Pruyn and Co. Inc., Glens Falls, N. Y. He will have charge of the finishing and converting installation in a building recently erected by Finch, Pruyn specifically for housing such new equipment.

Mr. Roehner joined the engineering staff of Finch, Pruyn in June 1958, after serving in the Coast Guard and graduating with a B. S. degree in engineering from the Coast Guard Academy.

Also announced is the appointment of Thomas A. Clear, as assistant purchasing agent and traffic manager. Mr. Clear was formerly in the accounting department.

Consolidated W.P.&P. Promotes Royan

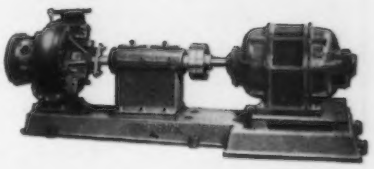
George Royan has been appointed to the newly created position of plant superintendent of the Appleton Division of Consolidated Water Power & Paper Co., it has been announced by L. E. Smith, division manager. In his new capacity Mr. Royan will supervise plant operations and maintenance.

To help you meet GREATER PRODUCTION DEMANDS

Frederick

CENTRIFUGAL PUMPS

***Provide* Continuous, Trouble-free Operation**



Horizontal "TS" Pump

Vertical "TS" Pump

For 40 years, Frederick Pumps have been helping paper mill operators meet ever increasing production demands by giving efficient, economical service with a minimum of maintenance and production down time. There is a complete line of mechanically advanced Frederick pumps for all purposes — each custom engineered and guaranteed to meet the operating conditions for which it is sold.

If you are planning to build a new plant or enlarge your present one, take advantage of the wide experience of Frederick pump engineers—who have helped to solve pump problems for some of the largest mills in the industry. Write or phone today for complete information and illustrated literature.

FREDERICK PUMPS

"The efficient, dependable heart of paper mills for 40 years"

FREDERICK IRON AND STEEL INC
FREDERICK *Est 1890* MARYLAND

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	June 6	June 13	June 20	June 27	July 4
1959	94.1r	95.5r	96.5r	95.8r	70.5
	June 7	June 14	June 21	June 28	July 5
1958	82.2	88.4	89.2	88.0	49.2

r Revised.
c Corrected.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1959	87.8	90.5	93.2‡	94.4‡	95.5‡	95.0‡	—	—	—	—	—	—	—
1958	86.9	89.5	89.5	88.4	87.2	87.2	75.3	89.6	86.5	91.6	90.4	83.1	87.1

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1952	1953	1954	1955	1956	1957	1958	1959
Year to Date	91.0	92.6	91.8	95.9	99.8	94.6	87.1	92.5
Year Average	88.6	92.3	91.6	94.0	97.9	90.9	87.1	—

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	June 6	June 13	June 20	June 27	July 4
1959	88	98	98	98	82
	June 7	June 14	June 21	June 28	July 5
1958	77	90	88	89	61

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1959	86	93	95	93	96	—	—	—	—	—	—	—	—
1958	80	86	88	84	84	86	76	93	90	95	92	81	86

† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING July 4, 1959	LAST WEEK ENDING June 27, 1959	CUMULATIVE TO DATE Jan. 1 to July 4, 1959 incl.
% Activity	82%*	98%	93%
TOTAL	275,478	323,657	8,045,005
Liner	100,293	109,805	2,756,412
Corrugating Material	44,332	47,572	1,219,562
Chip & Filler Board	4,147	6,717	136,218
Total Containerboard	148,772	164,094	4,112,192
Folding	45,249	63,484	1,484,223
Set-Up	8,996	12,352	304,090
Special Food Board	29,363	28,699	744,244
Other	43,098	55,028	1,400,256
Total Boxboard	126,706	159,563	3,932,813
Total Orders			
Received	289,984	306,242	
Unfilled End of Week	493,664	478,629	

* Includes inoperable Fourth of July

Alvin H. Johnson & Co.

INCORPORATED

Consulting and Designing Paper Mill Engineers

415 LEXINGTON AVENUE NEW YORK 17, N. Y.

PAPER MILL DESIGN PROCESS ENGINEERING POWER PLANTS

STRUCTURAL AND ARCHITECTURAL DESIGN

REPORTS APPRAISALS ESTIMATES AND SURVEYS

Comments on Super Calendering News

EDITOR, PAPER TRADE JOURNAL:

I was very surprised indeed to see two references in PAPER TRADE JOURNAL to experimental work being done on the super calendering of newsprint in the United States.

This subject is surely not new as it has been standard practice in England for many years, probably starting in the early thirties. The widest machine in England—the 320-inch news machine at Kemsley Mill—was running about 1400 feet a minute when I left a couple of years ago. All this production is super calendered on one unit the width of the machine, as indeed is all other paper manufactured in that mill which now has six machines.

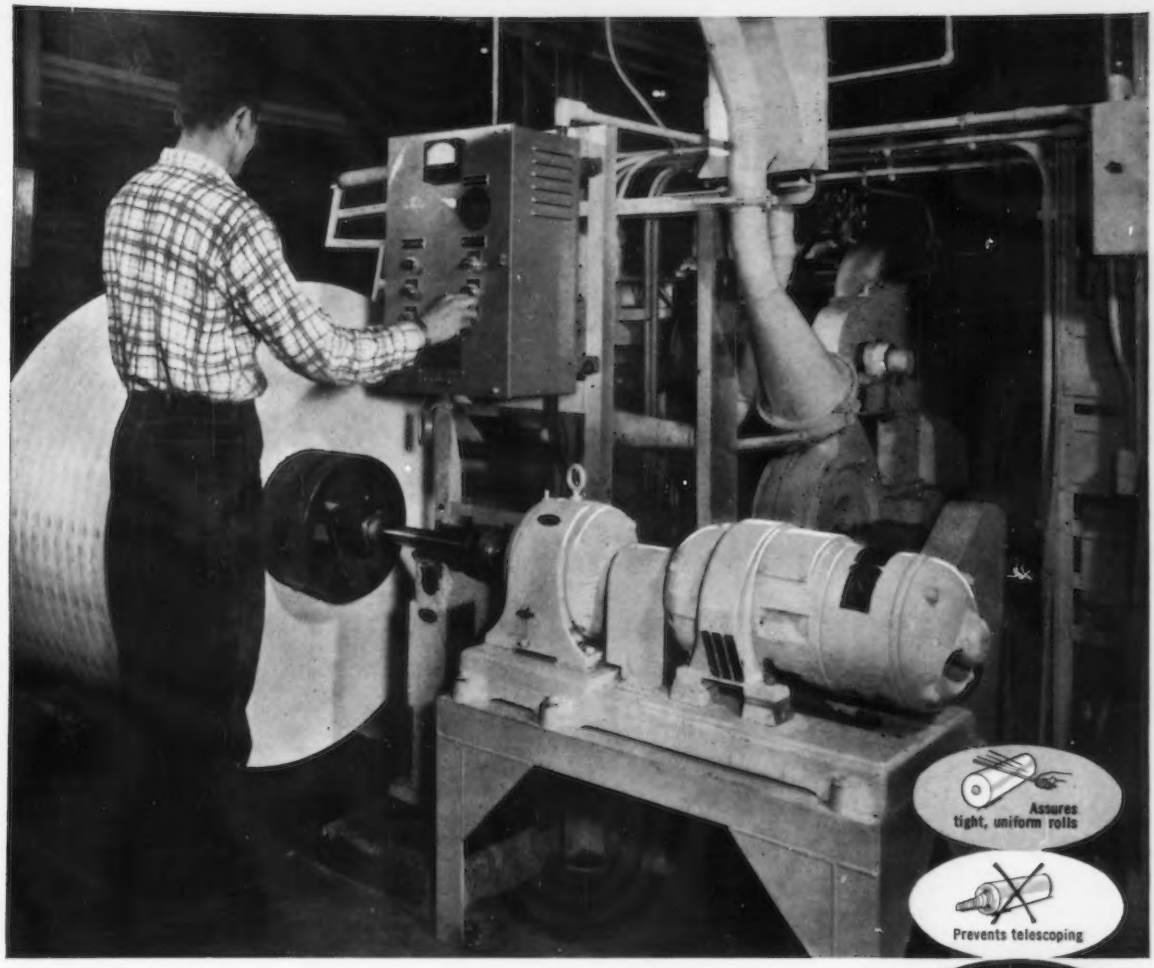
Although I am not familiar with the origin of the practice nor the exact reasons for it, I suspect it was undertaken with the same hopes in mind that prompted the work in the U. S. at the present time. There is no doubt that a smoother finish is obtained and that when the printers have been used to this paper for some time they can, and do, produce a very good job of printing.

The cost of the operation, however, is I think what stops most people outside of England from undertaking it. Before going to England I was under the impression, from what I had seen on my various visits, that a loss of five per cent would be not unusual because of the super calendering activity.

However, while I was over there I revised my views as it is quite possible to pick up one or two per cent of moisture both from the reel drum and the sprays used prior to it so that a net loss of about three per cent would probably be nearer the mark.

This is a major consideration when we think of the excellent printing results being obtained on well-made newsprint on the North American Continent. The cost of the extra manpower, as well as equipment, has to be added to the bill. Actually it does involve a revision of the entire dry end operation—in fact the sequence of promotion of papermakers — because the calendering and winding become unit operations in themselves, and the papermakers as such comprise the machine tender, backtender and a couple of helpers.

J. N. Franklin



Control tension – cut printing waste!

Louis Allis adjustable speed drives control roll speed and paper tension for break-free winding of printed stock

Wind-up tension can make or break your label printing operation. So take a tip from leading mills—rely on the Louis Allis Ajusto-Spede® for precise tension control to cut waste and downtime.

The 3 hp unit shown driving through a Louis Allis Line-A-Spede® gear directly into a center-winder is one of many paying applications. The operator simply dials the desired speed — the Ajusto-Spede delivers it as wanted, when wanted. The result: Proper web tension from the initial turn of the 12 in. dia. core to ready-to-ship 60 in. dia. roll of labels.

This precise adjustable speed control saves time, paper, and handling — eliminates operator fatigue and error. And it provides the same soft-start, accurately controlled acceleration, and smooth breakaway, whether you're handling delicate tissue or heavy board stock, parchment or paper.

Ajusto-Spede units are available in sizes from 1 to 75 hp. They feature linear speeds from 100 to 2,000 fpm; roll buildup ratios up to 15:1; controlled tensions from ½ lb. to 10 lbs. per inch of width; inertia compensation for maximum acceleration rates, plus adjustable stalled tension for smooth starts.

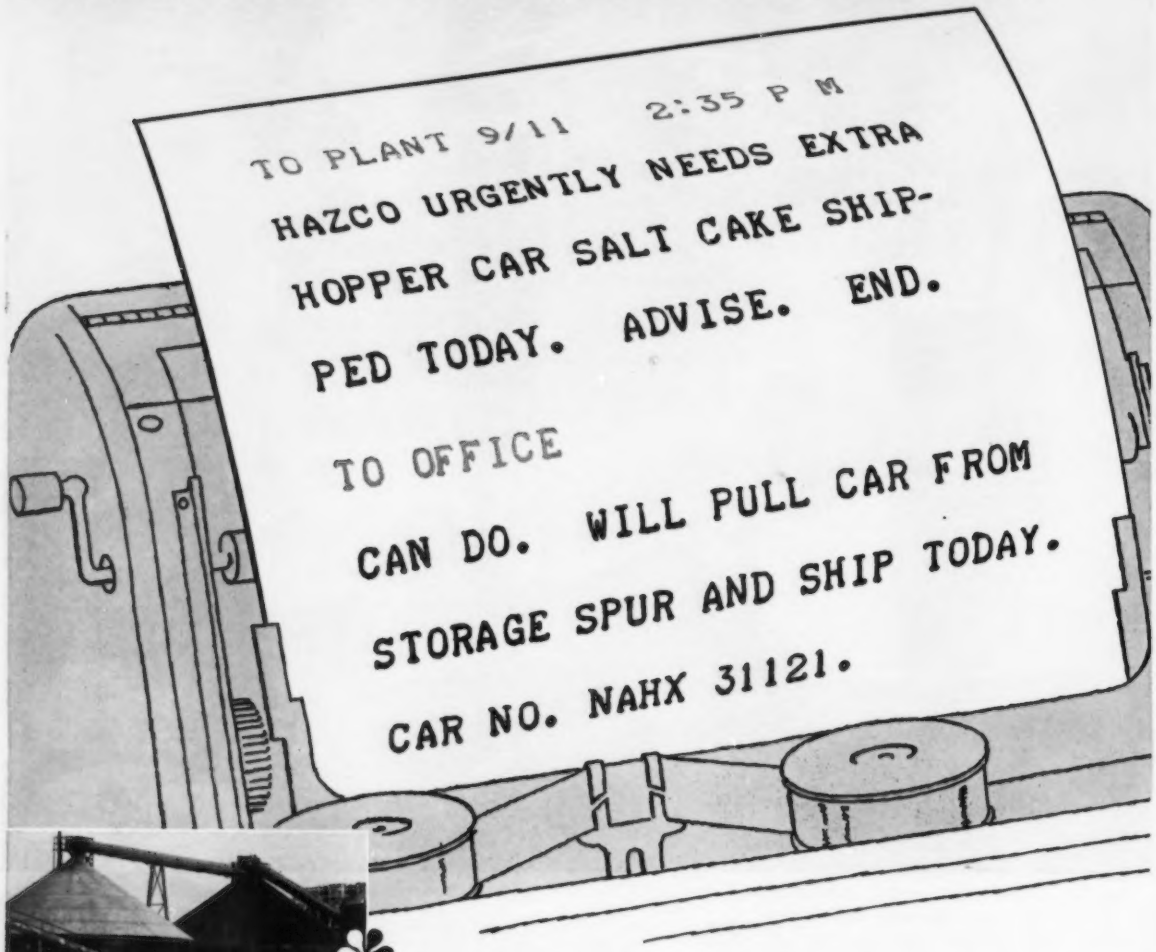
Get Bulletin No. 611-E. Ask for it at your Louis Allis District Office, or write The Louis Allis Co., 467 East Stewart Street, Milwaukee 1, Wisconsin.

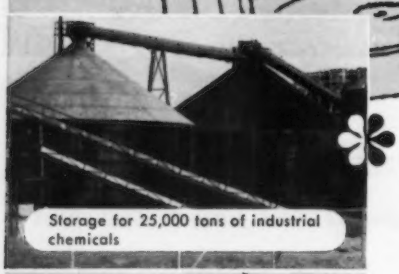
ASD-113

LOUIS ALLIS

MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE SPEED DRIVES

West End "fills the order"...


TO PLANT 9/11 2:35 P M
HAZCO URGENTLY NEEDS EXTRA
HOPPER CAR SALT CAKE SHIP-
PED TODAY. ADVISE. END.
TO OFFICE
CAN DO. WILL PULL CAR FROM
STORAGE SPUR AND SHIP TODAY.
CAR NO. NAHX 31121.


Storage for 25,000 tons of industrial chemicals

Immediate shipment in leased hopper cars

Vast natural source of raw material

Meeting service requirements to the letter and producing superior salt cake of consistent chemical analysis are the essentials to which the West End organization is uniquely geared. A system of rapid communications linking our sales office in Oakland with our production, technical and shipping departments at the desert plant site permits each department head to have a complete understanding of the customer's individual requirements and to make firm commitments or provide the desired information promptly.

WEST END SALT CAKE

WEST END CHEMICAL COMPANY

EXECUTIVE OFFICES, 1956 WEBSTER, OAKLAND 12, CALIF. • PLANT, WESTEND, CALIF.

DIVISION OF Stauffer STAUFFER CHEMICAL COMPANY

B&W *reduces pulping costs with three chemical recovery systems...*

KRAFT, MAGNESIUM BI-SULFITE and NEUTRAL SULFITE

Developed for the alkaline, sulfite and neutral sulfite chemical pulping processes, B&W now offers three efficient, dependable heat and chemical recovery systems. Here's how each can help you cut pulping costs, boost profits....

B&W Kraft. Oldest and most widely used, this system features two recent engineering developments. The *Venturi Evaporator Scrubber* reduces capital costs by accomplishing fume collection and liquor evaporation in one operation . . . increases overall thermal efficiency by lowering exit gas temperatures to approximately 200 F. *Improved boiler design* permits steam pressures to 1500 lbs, steam temperatures to 900 F. . . . a combination which improves overall plant heat rate, generates more steam to satisfy the industry's increasing requirement for economical power.

B&W Magnesium Bi-Sulfite is the only commercially proven system that recovers *both* heat and chemical from recovered waste sulfite liquors. B&W MgO units generate up to 13,500 lbs of steam per ton of pulp . . . require low chemical makeup. Annual pulp production by mills using Magnesium Bi-Sulfite Recovery Systems is over 500,000 tons.

B&W Neutral Sulfite.* Proven commercially, this B&W system was specifically developed for the *complete* recovery of NSSC liquors. The newest B&W NSSC recovery unit will process neutral sulfite semi-chemical waste liquors produced by pulping 250 tons of hardwood daily. It is predicted that 97% of the sodium, 92% of the sulphur will be recovered from liquor delivered to the recovery unit.

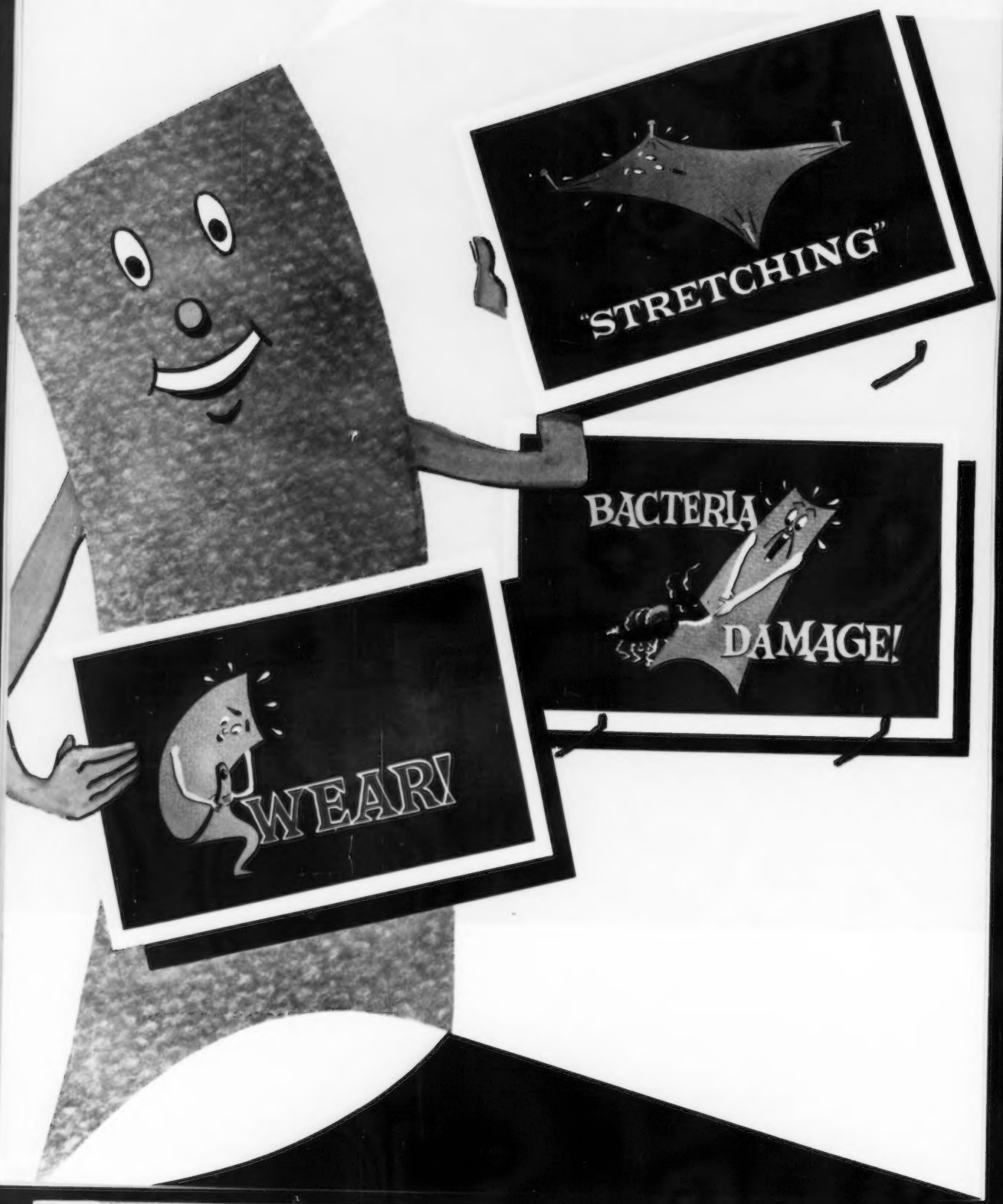
Throughout the world, these dependable B&W recovery systems contribute to lower pulping costs. Whether you're planning a new mill or thinking in terms of conversion, B&W engineers can recommend the *right* recovery system for your particular application. For more information, write The Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

*developed from the Mead Patents

B&W THE BABCOCK & WILCOX COMPANY
BOILER DIVISION

P-818

FIVE FELTS
IMPROVED BY



4-D TREATMENT

Why bother with single-purpose felt treatments to combat *individually* the 5 main causes of felt deterioration? — namely wear, stretching, plugging, and bacterial and chemical attack.

Today, applied to more than 55% of all Huyck felts, 4-D is the only *all-purpose* felt treatment that improves (1) toughness . . . (2) finish . . . and (3) openness *all at once* — thus adding a "4th dimension" to these three essential properties of papermakers' felts.

To learn more about the many ways 4-D can help you produce better paper, and more of it, at lower felt cost per ton — talk to your *Man-from-Huyck*.

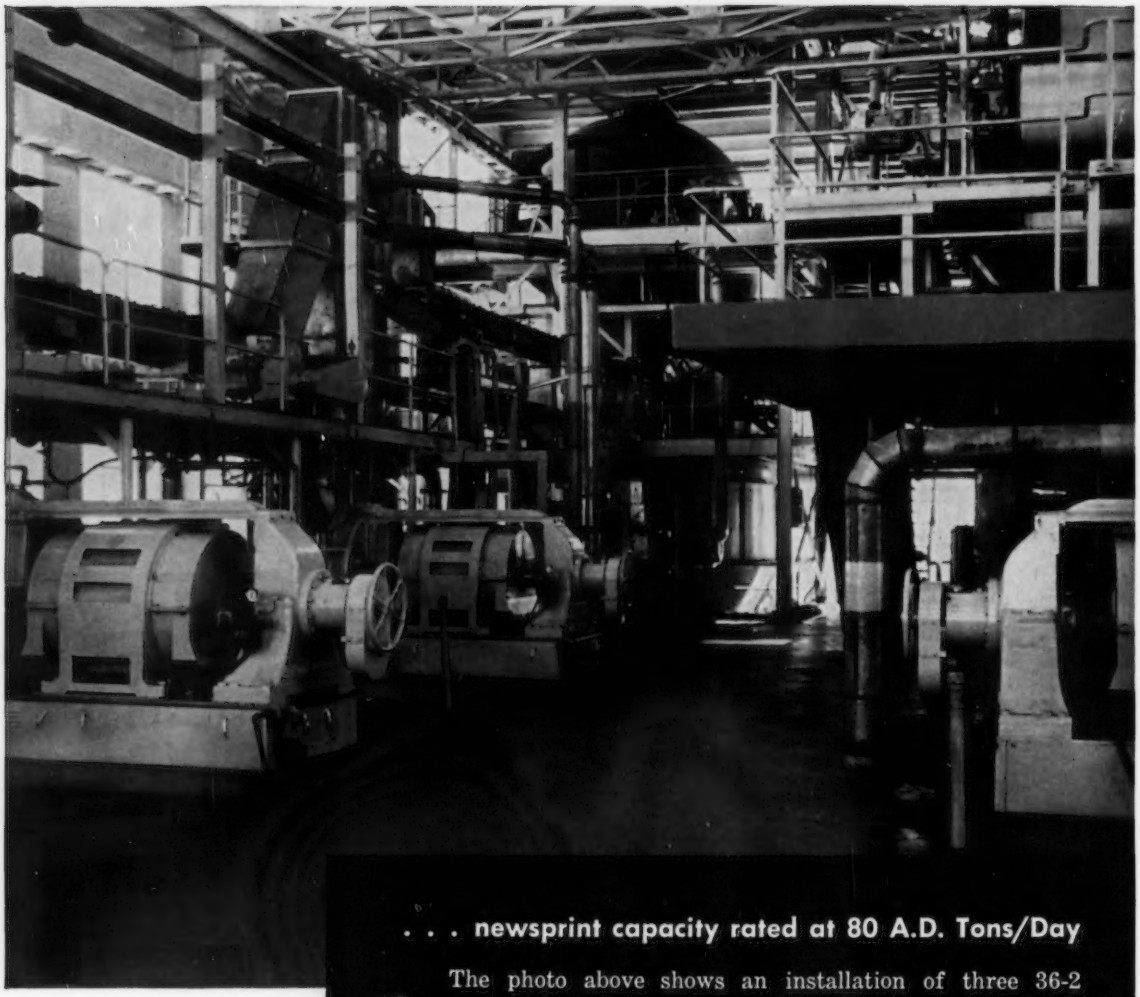
HUYCK FELTS

Huyck Felt. Co.,
Rensselaer, N. Y.;
Aliceville, Ala.;
In Canada: Kenwood Mills Ltd.
Arnprior, Ontario.
Division of F. C. Huyck & Sons

NEW HUYCK FELTS ★ INDUSTRIAL FABRICS

FIRST IN QUALITY • FIRST IN SERVICE SINCE 1870

Another Sprout-Waldron cold caustic installation . .



. . . newsprint capacity rated at 80 A.D. Tons/Day

The photo above shows an installation of three 36-2 "Sprouts" producing 40 A.D. tons/day of cold caustic pulp at the modern Australian Newsprint mill. Three additional precision-built, Sprout-Waldron Refiners have since been installed to bring the capacity up to 80 A.D. tons/day.

The use of 20% cold caustic has meant lowered operating costs, increased machine speeds, reduced furnish costs, and newsprint strength equal to the world's best. Sprout-Waldron's experience with cold caustic includes successful commercial installations producing a variety of pulps. Why not put this experience to work for you. Our representative will be glad to review the possibilities at your convenience.

REPRINTS AVAILABLE

The full story of this Australian Newsprint installation is being published by the Australian Pulp and Paper Industry Technical Association (A. P. P. I. T. A.). We intend to reprint it in Better Fibers. A note on your letterhead will reserve your copy.

SP/111

SW SINCE 1866

SPROUT, WALDRON & CO., INC. MUNCY, PENNA.

REFINERS • DIGESTERS • CONVEYORS • FEEDERS • SCREENS • MIXERS • DRAINERS • FIBER PRESSES • STOCK PROPORTIONERS

RIGHT FROM THE START

When piping costs come close to the million mark—when the installation is vast, and the leeway for error is small—a piping job must be right from the start to finish. Grinnell assures this through complete one-company control and responsibility. From interpretive engineering—through exclusive methods of prefabrication and testing of pipe and hanger units—to precision assembly and delivery, the job is all done by Grinnell, as only Grinnell can do it. The result: installations of any size, at costs known before you start, with assured performance. Grinnell Company, Inc., Providence, R. I.

Current Grinnell piping responsibilities.

Enrico Fermi Atomic Power Plant, Michigan; Ohio Power Company, West Virginia; National Aniline Division of Allied Chemical & Dye Corporation, Virginia; Memphis Light, Gas and Water Division, Tennessee; Aluminum Company of America, Indiana; South Carolina Electric & Gas Company, South Carolina; Duke Power Company, North Carolina; Union Bag-Camp Paper Corp., Virginia; Pennsylvania Power & Light Company, Pennsylvania; Holyoke Water Power Company, Massachusetts.

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Cady Exact Hand Model Micrometer

FOR POCKET/DESK/LAB

Cadytest Instruments are designed for accuracy in determining or comparing thicknesses, basis weights, or bursting strengths. They are available in stock models, or specials for specific tasks.

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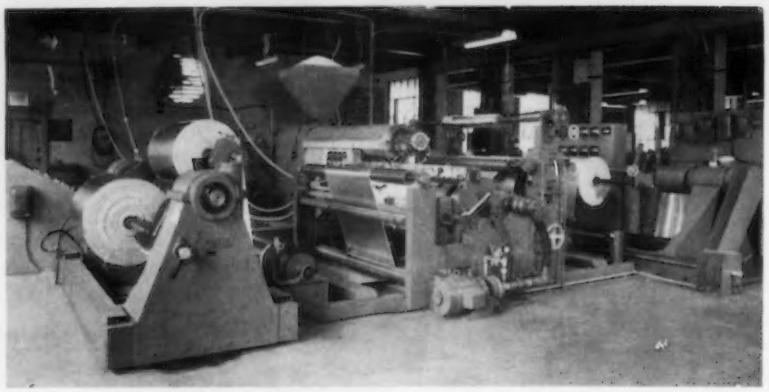
Cady Burst Tester Meets ASTM & TAPPI Standards

PJT NEWS OF SUPPLIERS



Protective Coatings Corp., Clifton, N. J., has installed a complete Egan extrusion coating line designed to handle polyethylene coating of paper, paperboard, films and foil.

Constructed by Frank W. Egan & Co., Somerville, N. J., the new 72-inch-wide unit will be used primarily for the production of flexible packaging materials. It may also be used for sandwich lamination.

The 4½-inch Egan extruder, with direct electric temperature control, has a 20/1 length to diameter ratio and is supplied with a cartridge type adapter.

The extruder is mounted on a motorized carriage. The turret unwind and turret winder feature a design which eliminates the center cross shaft. In addition, the single motor drive on the winder is designed to permit new roll starts without loss of tension control.

Bailey Meter Co. has named J. W. Cunningham manager of its Atlanta district office. Mr. Cunningham succeeds M. J. McWhorter who has retired from the company after 38 years (34 of them as Atlanta manager).

Bailey Meter, whose headquarters are in Cleveland, Ohio, manufactures instruments and automatic controls for the power and process industries.

Mr. Cunningham joined the company in 1947, after his graduation from Clemson College. He has been on the Atlanta staff since 1948.

J. W. Cunningham

J. H. Reid

John W. Bolton & Sons, Inc., and The Emerson Manufacturing Co. Division announce that Jack H. Reid has been appointed sales engineer. He will represent the manufacturer of machine knives and pulp and paper machinery and equipment in mills in the South.

Mr. Reid will cover Alabama, Mississippi, Louisiana, Arkansas, parts of Texas, Oklahoma and Tennessee working directly with John L. Sigler, Bolton-Emerson Regional Manager.

Previously a sales engineer for Bauer Bros. Co. and American Cyanimid Co., Mr. Reid is a graduate of the University of Mississippi with a B.S. degree in chemical engineering.

Joseph T. Ryerson & Son, Inc., Detroit, Mich., distributor of steel, industrial plastics, and metal fabricating machinery, has added Reynolds aluminum to its stocks.

Appointed head of the aluminum sales department is Edward D. Verkerk who has been associated with the aluminum industry since 1941. He was with the Reynolds Metals Co. for eight years before entering the

distribution end of the metal business. Joining Ryerson at its St. Louis plant, he was assistant product manager there before his appointment at Detroit.

H. P. Quinn

J. J. Lowe

Lindsay Wire Weaving Co., Cleveland announces that Hugh P. Quinn has joined its technical service staff. He has acted in a service capacity to paper mills for more than 20 years. Mr. Quinn was formerly with the Bagley & Sewall Co. and most recently with the Ross Midwest Fulton Corp. His services are now available to paper manufacturers in connection with the use of fourdrinier wires.

Derby Sealers, Inc., has announced appointment of James J. Lowe as assistant sales manager. A graduate of Boston University, College of Business Administration, Mr. Lowe has been connected with the tape field for several years in various phases of sales activity. In his new capacity, he will undertake specific duties in sales planning and customer relations, along with the general line of sales work.

Derby Sealers known for its expanding line of manual and automatic taping devices, maintains general offices in Derby, Conn.

The Bauer Bros. Co. announces that Wesley P. Bauver, sales representative, Springfield, Ohio, has returned to active duty after more than a year recuperating from injuries suffered in a plane crash in May 1958.

Mr. Bauver spent several weeks at the company's main office reviewing new products and other recent developments prior to returning to his New England sales territory on July 1. Before joining The Bauer Bros. Co. early in 1957, he was associated with Petrochemicals Co., Doeskin Products Inc., and Norwood Engineering Co.

OBITUARIES

Horace Scott Miller, 60, vice president and treasurer of the Pittsburgh Envelope Co., died July 8 at his summer home near Waterford, Pa.

Oscar W. Winte, 69, Evanston, Ill., vice president and general manager of the Hankins Container Co. since 1946, died July 1 in St. Francis Hospital.

Peter Berkey, 73, died July 3 in Evanston (Ill.) hospital. He was chairman of the molded package division of Diamond-Gardner Corp. and former president of the Self Locking Carton Co., which he founded in 1906.

Howard M. Fancher, 73, retired manager of the special products division of Rochester Folding Box Co., Rochester, N. Y., died June 29 at his home. He retired last July after having been associated with the box company more than 30 years.

If it takes 7.05 milligrams of Bond Blue B to match a blue on laboratory sheets weighing 3 grams, how many pounds of dye per ton would you call for, to produce the same shade in the mill?

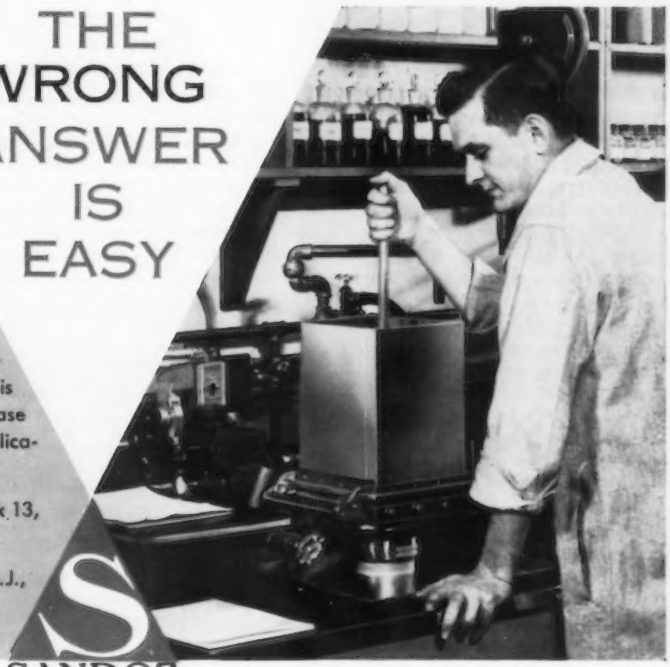
Warning: A simple transposal to equivalent pounds of dyestuff per ton of stock will give the wrong answer.

For a technical article discussing the problem of adjusting a laboratory dye formula to meet requirements of the individual mill, drop us a line. It is the latest Sandoz publication, designed to increase the industry's understanding of color and its application to pulp and paper.

SANDOZ, INC., 61-63 Vam Dam Street, New York 13, New York, ALgonquin 5-1700

District Offices: Charlotte, Cincinnati, Fair Lawn, N.J., Hudson, Mass., Los Angeles, Philadelphia.

THE WRONG ANSWER IS EASY



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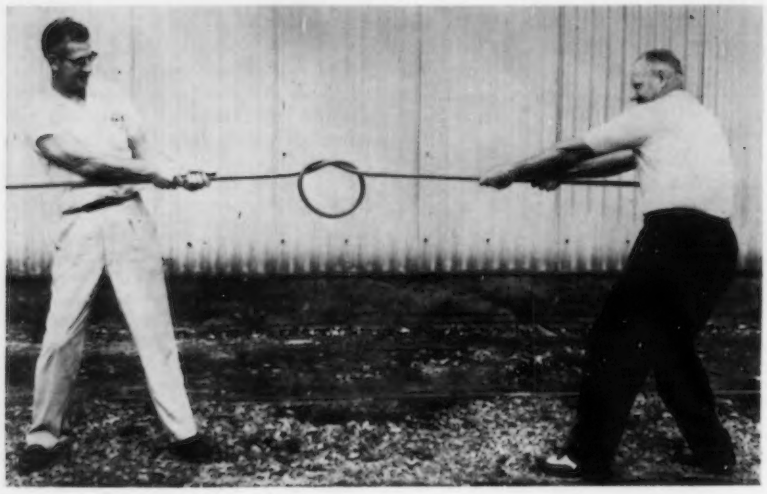
THINKS AHEAD WITH PAPER

SANDOZ

PJT NEW EQUIPMENT & SUPPLIES



Welded Steel Tubing Is Easily Workable

B & W "Lectrosonic" welded carbon-steel heat exchanger tubes are produced to ASTM Specifications A-214 and A-334 Grade C and identical ASME specifications. They are available in a complete range of sizes through 4½-inch outside diameter and in all normally required standard wall thicknesses.

They are operating in service in boilers at pressures as high as 2700 p.s.i. Specifically, they can be used in boiler, water wall, supply, riser, superheater, economizer, reheater, and attemperator applications within the limits of manufacturing and temperatures to which carbon steel seamless tubes may be subjected.

Made especially for "Lectrosonic" tubing, single width strip steel is produced by rolling an ingot into blooms, slabs, and finally into strip of the width required.

Another advantage claimed is the automatic removal of the weld flash, or bead, from the entire length of the tube during fabrication. This improves corrosion resistance and flow properties.

A continuous normalizing heat treatment process is used, following the weld operation, to eliminate differences of grain structure between the weld and the body of the tube. The heat treatment "homogenizes" the grain, at the same time providing uniform ductility for easy bending, "rolling-in" and other field work.

Pressure Screen Line Expanded

The Black-Clawson line of Selectifier screens for pulp and paper mill application has been expanded by the addition of a small capacity unit and an intermediate size screen. The expansion brings the number of Selectifier model sizes to four.

The 12-P is a small version of the original 24-P model and is designed specifically to answer customer demand for a Selectifier suitable for individual vat application on small cylinder board machines and low capacity fourdriniers. It is based on the same design and performance characteristics as the 24-P Selectifier screen.

The 12-P is a low horsepower, low maintenance screen with a maximum capacity of 1200 g.p.m.

The intermediate size 30-P model, 5700 g.p.m. capacity was developed to round out the line and fill the gap between the 24-P model (3800 g.p.m. capacity) and the high capacity 36-P size (9000 g.p.m.). Full details can be obtained from Black-Clawson Co., Shartle Division, Middletown, Ohio.

Plastic Cushion Cuts Machine Vibration

A superior anti-vibration material is claimed by its manufacturer to eliminate 90 per cent of the destructive vibrational tremors and noise caused by machines.

Designated "Vibra-Check" by its producer, Lowell Industries, Inc., Boston 34, Mass., this material is made of elastomeric vinyl plastic completely re-inforced with monofilament fiber glass.

Fused in layers under heat and high pressure to an integrated unit, Vibra-Check is said to be durable, re-usable, and impervious to shock as well as to chemicals such as oils, greases, detergents, and solvent cleaners. Its outer layers are of a resilient low density composition while its central core is a high density hard structure. A vibrational wave meets three different natural frequencies, preventing resonance and isolating the vibration. It conforms to rough and uneven floors.

Vibra-Check requires no bolts or adhesives. Its parallel outer surfaces keep machines level and vacuum suction cups molded into these surfaces combine with the natural gripping of the vinyl to prevent machine

"creeping." This high coefficient of friction simplifies relocation of machinery. The machine is virtually floated on this resilient cushion. Reuse of Vibra-Check pads is permitted by the high breaking strength of 7500 p.s.i. Suitable for machines from 100 lbs. to 100 tons Vibra-Check is cut to machine weight. Load-deflection tests show no deformation under high shock loads.

Plastic Protectors Increase Tube Life

Condenser and heat exchanger tube protectors that extend the useable life of old tubes and greatly increase the life of new tubes are available in three plastics—nylon, polyethylene and phenolic resin. They resist corrosive, chemical and fungus attack, are impervious to oils and

Which of these 3 products and services can you use from BECCO?

New Cold Caustic Bleach Process

Looking for a way to use greater amounts of low-cost, more plentiful pulp—without capital investment for bleach equipment? Then let a Becco Sales Engineer show you our new technique* which allows you to bleach in the same equipment regularly used for the manufacture of cold caustic pulp.

In this new process, peroxide bleach liquor is added at the Bauer Refiner, and bleaching occurs during the refining operation. Bleach response depends on refiner densities.

Up to 20 points brightness increase has been obtained in commercial operations to date, and with no additional steam costs, no holding time, and no excessive chemical costs.

Becco can assist you immediately in setting up a production run and evaluating results. First step: use the coupon to let us know you're interested.

Need a Bleach Plant in a hurry?

By now, you've probably heard about Becco's Dryer Steep Bleaching Process for insuring brightness permanence by spraying Hydrogen Peroxide across the pulp sheet ahead of the dryers. And you probably know that although the process is patented, Becco will grant a perpetual license for just $1.00.

But there may still be a question in your mind as to how you can prove this out in your own mill—how you can set up a bleach plant in a hurry.

Becco has the answer to this, too. We'll be glad to provide you with a complete "bleach-plant kit"—for as long as you need it—consisting of all the equipment needed to make up peroxide bleach liquor and spray your production sheet.

Here's an opportunity for you to prove to yourself, quickly and easily, that this Becco process will maintain your layboy brightness level — even **improve** it — through shipping and delivery.

If you'd like to take us up on this offer, drop us a line, or mail the coupon below. And of course, even after we demonstrate, you incur no obligation.

TECHNICAL BULLETINS

We got 'em—
You can have 'em!
They're FREE!

Years of experience in paper and pulp processing have produced a library of technical information which is available in individual bulletins, free on request. Use the coupon below to let us know which you'd like to receive.

- **No. 31 — Groundwood Bleaching Variables — A Statistical Approach.**
- **No. 32 — H_2O_2 Bleaching of Chemicals and Mechanical Pulps.**
- **No. 47 — Peroxide Bleaching of Pulps.**
- **No. 48 — High-Density Pulp Bleaching.**
- **No. 64 — Development Studies on Last-Stage H_2O_2 Bleaching of Alkaline Pulps.**
- **No. 65 — Peroxide Bleaching of Southern Pulps.**
- **No. 66 — Becco Laboratory Procedures for Pulp Bleaching, 1955 Ed.**
- **No. 91 — Peroxide Bleaching of Chemi-Mechanical Hardwood Pulps.**
- **No. 92 — Peroxide Bleaching of Chemical Pulps.**

BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York
Dept. PTJ-H

Gentlemen:
Please have a Sales Engineer give me more information on Becco's Cold Caustic Bleach Process.

NAME_____

FIRM_____

ADDRESS_____

CITY_____

ZONE_____ STATE_____

BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo 7, New York
Dept. PTJ-J

Gentlemen:
Yes! We need a "bleach plant in a hurry". Please send us more information about Dryer Steep Bleaching.

NAME_____

FIRM_____

ADDRESS_____

CITY_____

ZONE_____ STATE_____

BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York
Dept. PTJ-G

Gentlemen:
Please send me a copy of each of the following bulletins:

— — — — — — — —

NAME_____

FIRM_____

ADDRESS_____

CITY_____

ZONE_____ STATE_____

greases, and will withstand temperatures up to 250° F.

The protectors are designed to protect the inlet section of tubes against wear damage caused by erosive and corrosive conditions. These include the abrasive action of sand and salt entrained in water and air impingement caused by the release of oxygen due to turbulence when water enters the tube, and being more resistant to the foregoing elements than the tube metal itself, they need never be replaced.

Special design features are also incorporated. The entrance end is flared to provide smooth entrance for the water and the inner surface polished to prevent foul up or formation of scale. The inner wall gradually tapers toward the discharge end to provide the thinnest possible wall at that point, thus said to eliminate turbulence and pressure drop-off. Tube sizes range from $\frac{5}{8}$-inches by 18 bwg to 2 inches x 8 bwg, lengths from $2\frac{1}{8}$-inches to six inches.

Bulletin, P-335, may be obtained from Crane Packing Co., Dept. PJ-6, 6400 Oakton St., Morton Grove, Ill.

Play It Smart!
Use Bitusize® "B" emulsified asphalt integral sizing to get high dry and wet strength in all your hard sized grades of board. Contact our office nearest you for complete information.
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Atlanta 8, Ga. Tucson, Ariz. Inglewood, Calif.
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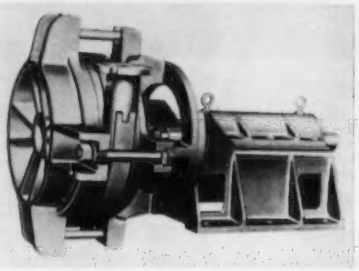
Bitumuls® Emulsified Asphalts • Chevron® Paving Asphalts
Laykold® Asphalt Specialties
SOAP CHIPS
V3c
DYNAMITE
Cola
V3s
BEER

Slurry Pump Is Heavy Duty

Morris Machine Works, Baldwinsville, N. Y., is marketing its model 6 RXW centrifugal pump designed to handle abrasive slurries.

Ranging in 2 to 6-inch sizes, the

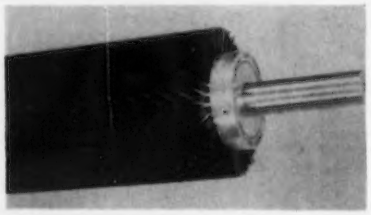


type RX pump features a low pressure stuffing-box and 4-bolt accessibility. Wearing parts are reached without disturbing piping; rotating element is adjustable to compensate for wear. Liners on both sides of impeller are renewable.

A heavy outboard radial bearing provides extra capacity for high overhung loads; suction and discharge nozzles swivel to meet requirements of any installation.

Conveyor Belt Cleaning Brushes

Metlkor rotary and spiral brushes are engineered by M. W. Jenkins' Sons for automatic removal of particles or chips of material from fabric,



metal or rubber conveyor belts and adjacent operating equipment. Brushes for intermittent or continuous duty are available. Jenkins' Metlkor brushes are designed for efficiency and thorough cleaning, and feature easy installation and adaptability to any system.

The bristles in Jenkins' Metlkor brushes are made of Du Pont Tynex Nylor or other materials according to use, are designed for uniform, perfect pressure, and are resistant to the corrosive effects of acids, alkalies, etc. The cores are made of steel or aluminum. Detailed information is available from M. W. Jenkins' Sons, Inc., 444 Pompton Ave., Cedar Grove, N. J.

This HOOKER MANUAL helps you store and handle caustic soda safely

This new manual gives you 40 pages of information and advice on how to handle and store liquid caustic soda safely, efficiently, and with minimum risk of contamination.

Here are some of the contents:

- ✓ Large, detailed diagrams of equipment to use in unloading, diluting and storing.
- ✓ Commonly used methods for unloading a tank car of liquid caustic soda, for diluting to different strengths, and for storing.
- ✓ A section on safety precautions and first aid.
- ✓ A section on materials of construction.
- ✓ 18 charts, graphs and tables to help you predict and control the behavior of liquid caustic under a wide range of operating conditions. These cover such properties as dilution temperature, vapor pressure, viscosity, specific heat, etc.

For your copy of this new manual, write us today or use the coupon.

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Please send me a copy of Bulletin 102, *Caustic Soda Engineering and Handling Guide.*

NAME.....

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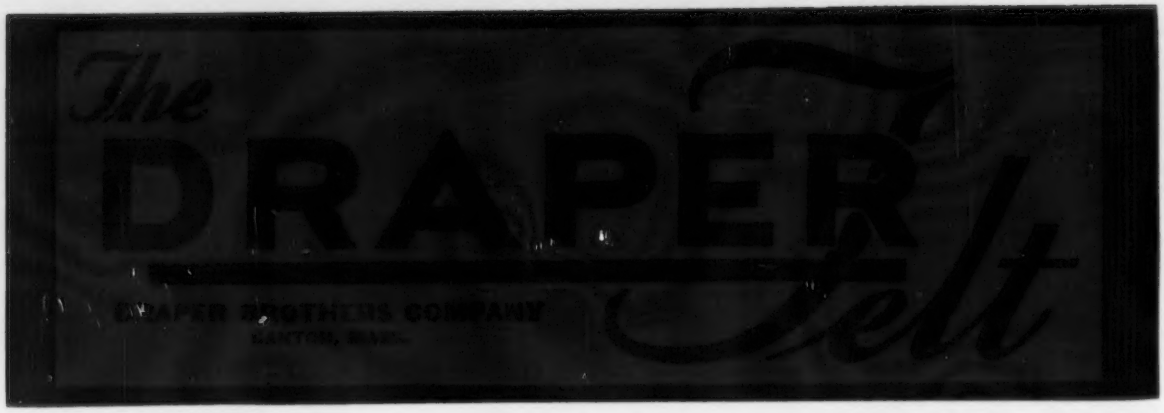
COMPANY.....

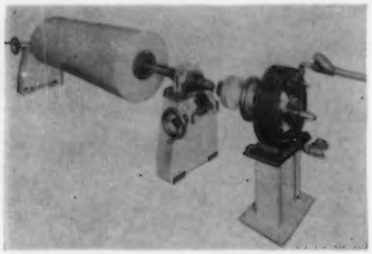
STREET.....

CITY..... STATE.....



Unwind Stand Features Air Brake

An air-brake controlled unwind stand for precision feeding of film, foil, paper and board to any converting or printing machine, has been announced by Dietz Machine Works.



The air-brake feature is said to provide extremely uniform control of web tension during roll build-down. A worm gear arrangement for maintaining web alignment is manually operated or can be furnished for full automatic operation.

A unique quick-disconnect jaw-chuck coupling locks the roll shaft securely to prevent slippage during operation, and permits easy loading. Ball bearing pillow blocks with safety locks are standard on the machine.

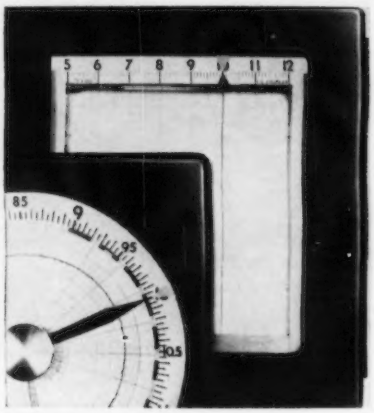
The unwind stand is described in Bulletin No. 121, available on request from Dietz Machine Works, 126 W. Fontaine St., Philadelphia 22, Pa.

Recording Controller For Steam Temperature

Leeds & Northrup Co. is offering two new space-saving models of its Speedomax H Recording Controller for steam temperature control.

Both models are only 12 inches high and 11 inches wide, yet offer easy readibility. The Model S strip chart is best for detailed records with its 6½-inch linear scale. The Model R is recommended for bold indication; curves are easily read since they are plotted along a straight-line radial scale.

With its range of 500° to 1200°F, the instrument is claimed to have an accuracy of better than ± 0.3 per cent, while sensitivity is better than ± 0.1 per cent. Its control slidewires and adjustable alarm contacts are mounted on a rigid shaft for permanent alignment. Other safeguards include a factory-set high-alarm contact to lock out control and sound an alarm in the event of a severe disturbance, or a thermo-couple or amplifier failure. Amplifier and thermo-couple fail-safe circuits are also provided for added protection.



For further information write L & N, 4934 Stenton Ave., Phila. 44, and ask for Product Data Sheet 463-143.

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"PACKAGE" CONTRACT
When planning new pulp and paper facilities consider our "package" contract. It provides a single source for site study, design and construction.
Ask for details.
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Serving Timber Industry since 1910
Timber Estimators and Foresters
C. D. SHY & COMPANY
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Memphis 3, Tennessee

moves moisture from the air, the other is regenerated by built-in elec-

CHLORINE

top quality, fast delivery, specialized service from Pennsalt

When you get Pennsalt® Chlorine, you're sure of getting the high quality and ample supply provided by modern production facilities . . . plus specialized service and technical aid based on over half a century of Pennsalt experience in serving the chemical needs of the pulp and paper industry. And you'll get fast delivery from one of five Pennsalt chlorine plants: Calvert City, Ky.; Wyandotte, Mich.; Tacoma, Wash.; Portland, Oregon; and Mexico City. See Pennsalt for other quality chemicals too . . . including caustic soda, hydrogen peroxide, ammonia, sodium chlorate and Nonic® surfactants. Get full information from your nearby Pennsalt branch office.

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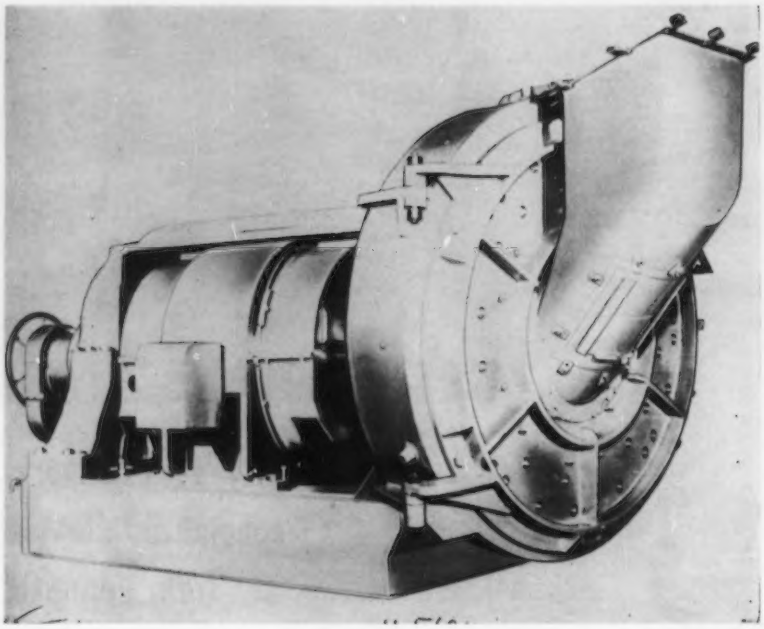


Advantages Seen In Chip Fractionator

The availability of a line of chip fractionators for reducing chip size prior to digesting has been announced by Sprout, Waldron & Co., Inc. Laboratory and field tests indicate that chip fractionation may result in overall yield increase, reduction of active alkali, reduction of screen rejects, shortening of digester time and elimination of the preknotter operation.

Sprout-Waldron chip fractionators are available with a variety of plate designs and disc diameters, with the choice dependent upon the production requirements. The following specific advantages were reported from test fractionating of soft wood chips which are used in the kraft process:

1. Three to 4 per cent increase in yield.

2. Reduction of active alkali by 10 to 12 per cent.

3. Reduction of screen rejects from 4 per cent to less than 1 per cent if the same yield is maintained.

4. Shortening of cooking time in the digester by approximately 20 minutes.

5. Elimination of the preknotter operation.

6. Improvement of strength characteristics.

Further information is available upon request.

Air Humidifier Is Small, Compact

Development of a compact air dryer for continuous dehumidification of laboratories, test rooms, and small storage areas has been announced by Dryomatic Corp. of Alexandria, Va. Designated as the Model 50, the machine is the smallest in its line of dual-bed, desiccant-type dehumidifiers.

Designed to provide a continuous, low-volume flow of dehydrated air, the entire unit measures only 37 by 17 by 23 inches and weighs 185 lbs.

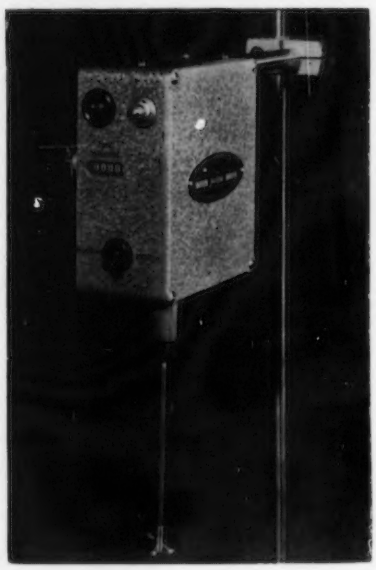
The Model 50 removes up to 24 lbs. of water per 24 hours, and can hold a 10 per cent relative humidity in confined spaces up to 17,500 cubic feet. It delivers a constant flow of 50 c.f.m. dry air by alternate utilization of two beds of permaent silica gel drying agent. While one bed removes moisture from the air, the other is regenerated by built-in electrical heating elements which vaporize the adsorbed moisture and exhaust it outside the dehumidified space. Fully automatic on-off control is provided by a hair-element humidistat.

Gelation Timer Operates Unattended

The Tecam Gelation Timer is used for determining the pot-life of synthetic adhesives, silica sols, drying oils, plastics, and other liquids that gel. This instrument is said to eliminate the uncertainties inherent in subjective tests and can be left working overnight and on week ends.

A weighted disc immersed in the resin is subjected to a simple harmonic vertical motion, with a periodic time of one minute, by connection to a geared synchronous electric motor.

As the resin sets, a point is reached at which stiffness is sufficient to support the weight of the disc during a thirty-second, half-cycle. Up to this point, the connecting link has been under tension during both up



and down strokes. As soon as the disc is supported, the link on its down stroke is subject to compression causing an electric contact in the link to close a circuit. This in turn opens a relay irreversibly, stops the synchronous motor, and lights a small neon lamp to attract attention. More information on the Gelation Timer is available from Arthur S. LaPine and Co., 6001 South Knox Ave., Chicago 29, Ill.

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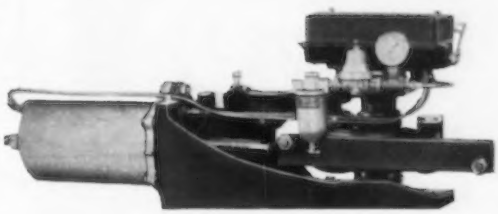

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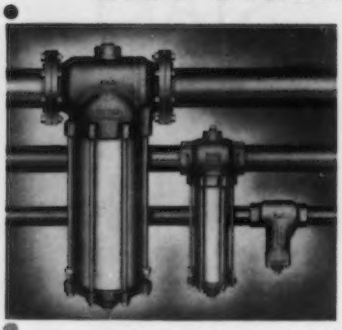

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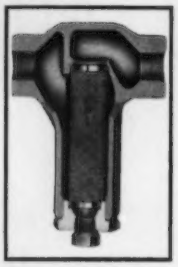

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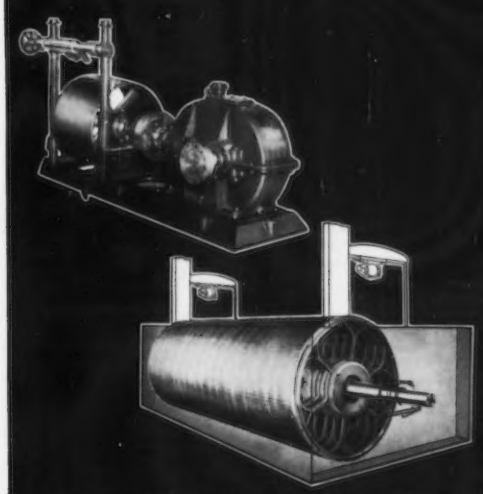

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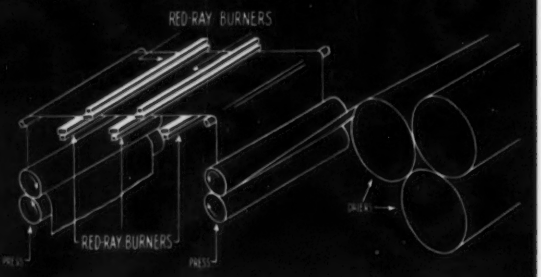

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